THE AUTOMOBILE

WEEKLY | NEW YORK—THURSDAY, FEBRUARY 28, 1907—CHICAGO | 10 CENTS

The Pneumatic Tires of "Sterling Quality"

FOR ALL STANDARD RIMS

"Firestone" Quick Detachable

"Firestone" Detachable Clincher

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ON SAFETY UNIVERSAL RIM

These tires may also be used on other standard detachable rims. Removable flange rings equip this rim to receive any other standard detachable tire.

The Safety Universal Rim is distinctly a "Firestone" product; it is the latest rim on the market and embodies quick-acting features second to no other 1907 rim, at the same time making greater provision for absolute safety.

Mechanically Fastened

Our 1906 Pneumatic with clips eliminated and a spreader added.

Standard Clincher

We are producing a full line of standard clincher tires.

"Firestone" *Pneumatics are made with the same regard for dependable high quality that has made* "Firestone" *Side-Wire Motor Tires the standard of the World for Commercial Motor Vehicles.*

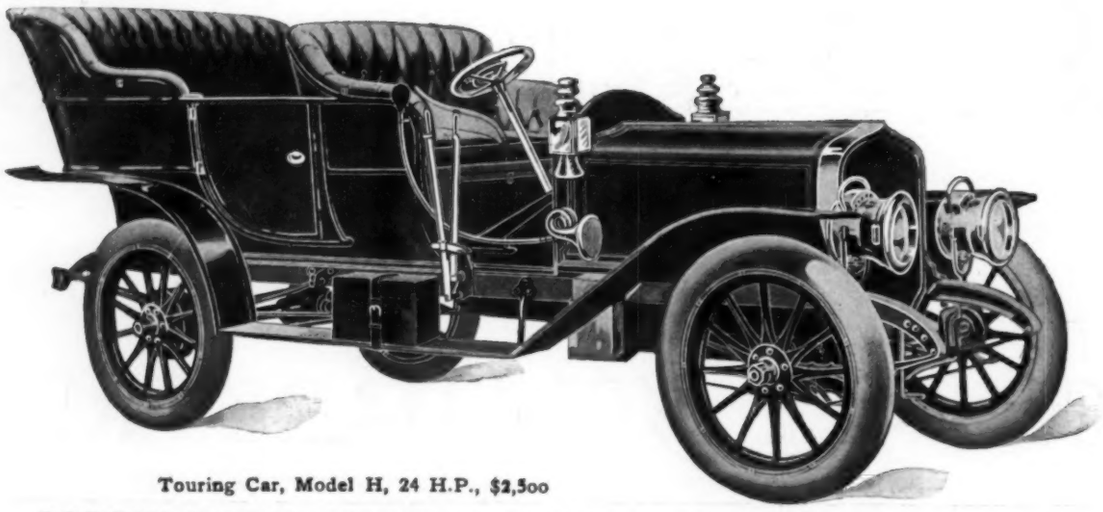
The largest exclusive makers of rubber tires in the United States.

FIRESTONE TIRE & RUBBER CO., Akron, Ohio

BRANCHES:

New York, 233 West 58th St. corner Broadway; Philadelphia, 2211 North Broad Street; St. Louis, 2226 Olive Street; Boston, 9 Park Square; Chicago, 144 Michigan Ave.; Detroit, 240 to 242 Jefferson Ave.; Buffalo, Cor. Ellicott and Tupper Streets; Pittsburg, 5904 Penn Avenue.

CORBIN

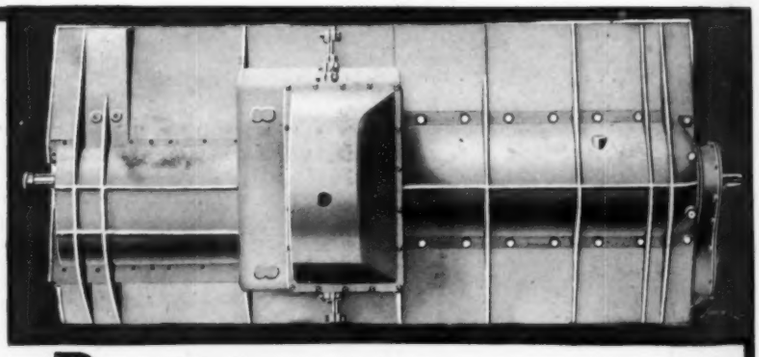


Touring Car, Model H, 24 H.P., $2,500

CORBIN MOTOR VEHICLE CORPORATION, New Britain, Conn.

Member Association Licensed Automobile Manufacturers.

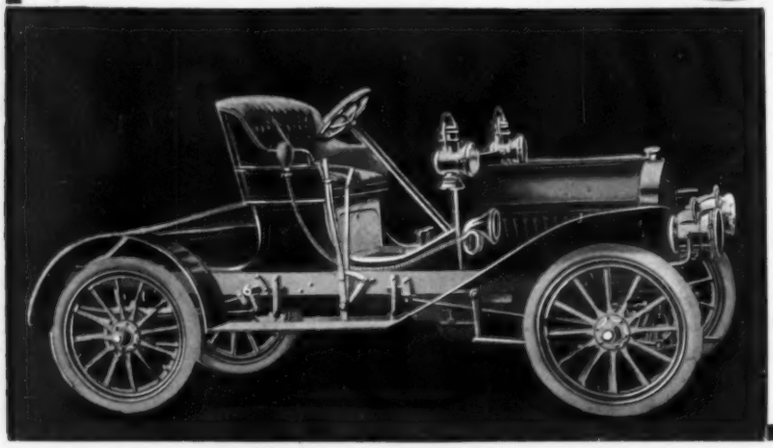
Absolutely Mud Proof



Look upward from underneath many motor cars, what do you see? A mass of mechanism covered with dirt and grit which can be depended upon to cut out bearings, clog carburetor and give endless trouble, bringing the machine to the scrap heap years sooner than would ordinary wear could mechanism be kept clean as in the

Mora Roadster

MECHANICALLY RIGHT.



where a glance upward from underneath will show a clean aluminum pan from the bottom of which mud and dust can be washed without chance of injury to mechanism, and beyond which mud and dirt cannot go. This is **our own** original feature. Patent applied for. Only one reason why

"Every Owner is a Satisfied Motorist"

Specifications—Four cylinder vertical Engine, 24 horse power, water cooled. 98-inch wheel base; 32-inch wheels. Weight 1700 pounds. Entirely mud proof. Price $1800. Surrey seat $125 additional.

MORA MOTOR CAR CO.

318 Livingston Bldg.,

Rochester, New York

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THE AUTOMOBILE

VOL. XVI. NEW YORK—THURSDAY, FEBRUARY 28, 1907—CHICAGO No. 9

THE MOTOR BOAT HAS ITS OWN GARDEN SHOW

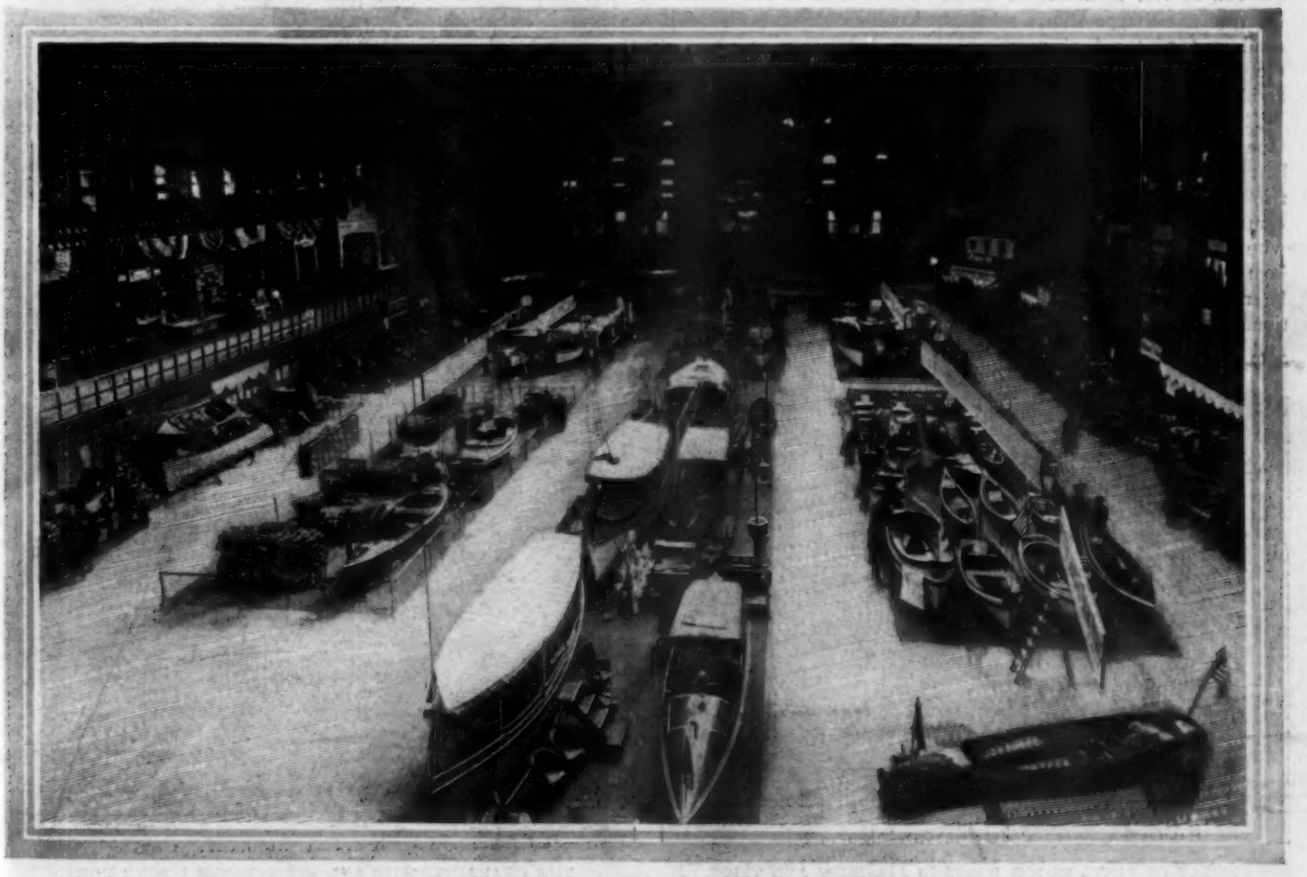
BY R. F. KELSEY.

DEVELOPMENT of the explosive type of motor for marine purposes has been coincident with its development for automobile, but in somewhat different lines and in keeping with the conditions governing the uses to which it is put. Scarcely ten years have passed since the crude productions of the pioneers in the industry were fitted to a few hulls and launched with some trepidation upon the sea of experiment, and it is only within the past five years—or to be more exact, the past three years—that the marine motor has reached the advanced state of development commensurate with the requirements of present day conditions.

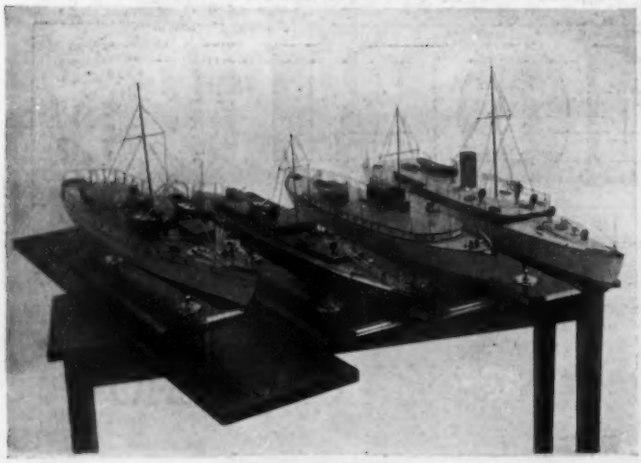
Of necessity a radical change has been necessary in the design and construction of hulls. Power above decks, as represented by sails, and power below decks, as represented by motors, called for hulls different in character, and the working out of problems by a slow and costly process of elimination. How well this has been accomplished has been exemplified to a nicety at the Motor Boat Show which closed this week in Madison Square Garden, New York City, after a week of splendid success, both from the standpoint of business transacted and patronage by the public.

The exhibition was the first distinctive motor boat show held in the metropolis, the sportsmen's exhibit, which has heretofore been held in conjunction with it, having been discarded as a feature. The National Association of Engine and Boat Manufacturers had full control of the show, and as the organization is comprised of the oldest and most firmly established houses in the country, the exhibits were thoroughly representative and varied.

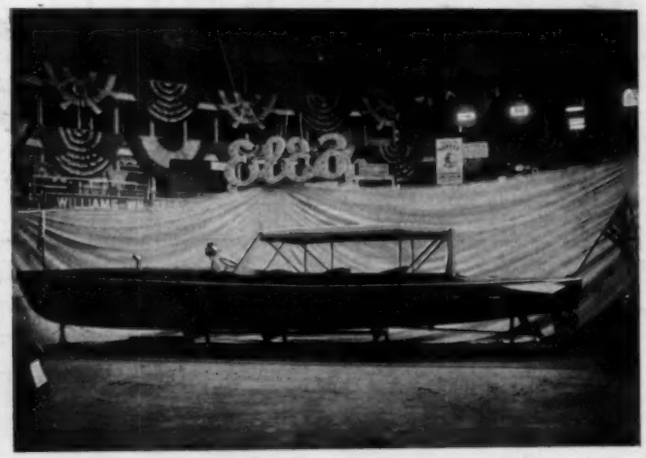
Pleasure craft, of course, predominated; in fact, practically comprised all that was shown, and the infinitely wide range of design attainable in this category presented a fine field for



FROM THE CENTRAL POINT OF OBSERVATION THE SHOW PRESENTED A FULL COMPLEMENT OF UP-TO-DATE CRAFT.



"LYDIA," "CACTUS II," "NORKA," AND "AIDA" MODELS.
Exhibited by the Williams & Whittlesey Company, Steinway, N. Y.



THE ELCO "EXPRESS," AN UP-TO-DATE PLEASURE CRAFT.
Exhibited by the Electric Launch Company, Bayonne, N. J.

study for those nautically inclined. The absence of purely racing freaks was noticeable, the trend of design seeming to lie in the direction of trim, substantial-looking hulls, so built as to admit of high speed if suitably horsepowered.

Increasing Popularity of Trunk Cabin Cruisers.

In contrast with this type, the cabin cruisers, with sea-going properties, formed a pleasing relief with their roomy cabins and homelike accommodations, to their slenderer, fleeter sisters. Cabin cruisers are rapidly gaining in popularity, with those who like to venture off shore out of sight of land, and are now built in a distinctive type from 27-foot length upward. Seaworthiness, not speed, is their chief characteristic. They are full-bodied, moderate in beam, of full wide stern, and the most advanced type shows relatively small displacement aft, the deadwood of the keel reaching almost to the waterline, and the line of recession aft on the bottom commencing about amidships.

The installation of a power plant in a craft of the above type has always been more or less of a problem, but it is best exemplified in a location at the rear of the cabin, about two-thirds of the way aft. This allows short reaches for the controlling levers which should be handy to the helmsman, who necessarily should be able to control the engine of a boat of this type at all times and on all occasions. It should be remembered also that the wheel in the type of boat mentioned must necessarily be located at end of cabin above deck, and its immediate proximity to the motor is desirable.

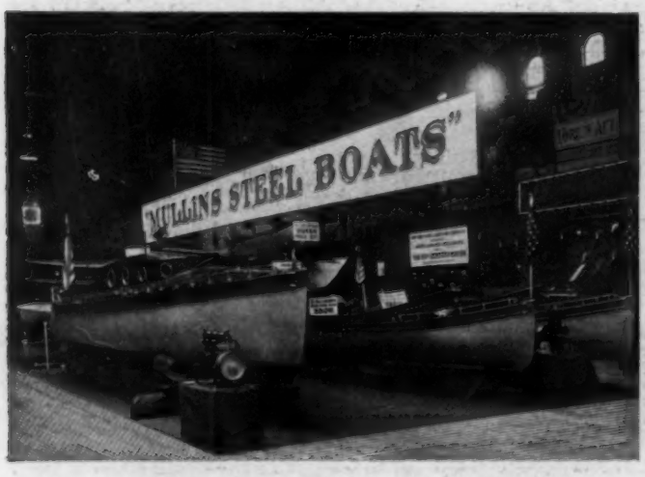
Necessarily the larger type of motor boats could only be shown by miniature models, and the exhibit of these showed four—the *Aida*, 80 feet; *Lydia* and *Cactus II*, 75 feet each, and *Norka*, 67 feet. All of these are full trunk cabin yachts, and range in speed from 20 miles per hour in the *Aida* to 17 miles per hour in the *Cactus II*.

Steel boats, shown in variety at several exhibits, demonstrated a marked improvement in design over last year's models, also superiority in construction. They embody distinct characteristics peculiar to the nature of the body material, but present no difficulty in their ready adaptation to power propulsion; in fact, their increasing numbers prove a widespread popularity.

A newly-named model for the coming season is the high-speed "runabout," a semi-racing type of boat, fitted with lightweight highly-developed motors of well rated power. These boats are made in popular lengths, the 21-footer predominating in the exhibits made. In power-driven yacht tenders a tendency is shown among builders to combine the large carrying capacity of the ordinary tender with the speed and convenience of the runabout type mentioned above. One type shown was equipped with 25-horsepower motor, has a gauaranteed speed of fifteen miles per hour, and a total weight of only 1,350 pounds—a remarkable combination for a serviceable craft.

Selling Price of Products Meets All Purses.

The wide range of prices for fully-equipped motor boat outfits puts them within the reach of everyone's pocketbook. The lowest price quoted was $94.50. This, of course, was for



DISPLAY OF STEEL MOTOR BOATS IN ALL SIZES AND TYPES.
Exhibited by W. H. Mullins Company, Salem, Ohio.

THE CHARACTERISTIC AND SERVICEABLE POWER DORY.
Exhibited by the Atlantic Company, Amesbury, Mass.

a very small boat, with a motor of minimum horsepower, but it told the possibilities of the industry and its ability to meet the widest range of demand. Moderate powered boats, from 18 to 25 feet, selling all the way from $250 to $1,000, according to finish, horsepower and equipment, formed the bulk of the popular-priced models in open boats. Above the range of one thousand dollars in price there are numerous stock models up to $5,000, and above that price special designs prevail. Half cabin cruisers can be purchased as low as $1,500, but the popular sea-going type, 31 to 40 feet in length, ranges from $2,500 to $3,500. The largest boat shown was a forty-foot full cabin launch, beautifully furnished, and finished in natural polished mahogany, a $10,000 beauty.

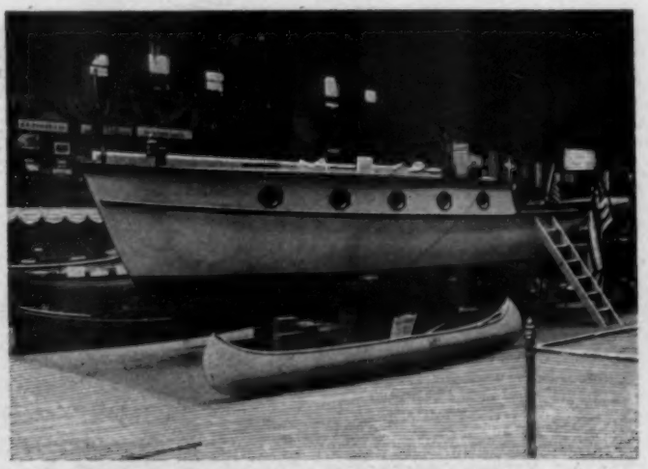
As is the case with the automobile industry, manufacturers of supplies, fittings and equipment are finding a very productive field in the realm of the motor boat. The balconies were devoted to these exhibits and a number of others found space on the main floor to show their wares. The most rapid advance noted among the specialists is in improved methods of ignition and the development of electric lighting plants for power boats. Names familiar in the automobile sundry supply dotted the big Garden, demonstrating the common kindred business interest which dominates all motor-driven conveyances, whether terrestrial or aquatic.

LARGEST ENGINE TO THE RIGHT IS 300-HORSEPOWER.
Exhibited by Standard Motor Construction Company, Jersey City, N. J.

POWER BOAT ASSOCIATION'S MEETING.

At the annual meeting of the American Power Boat Association, held February 20, at the Hotel Knickerbocker, New York City, officers were elected for the ensuing year and arrangements made for the race for the Gold Challenge Cup in August, the Gravesend Bay to Hampton Roads contest and the two cups given by the Brooklyn Yacht Club. The total membership of the association was brought up to forty-five organizations by the election to membership of the Hampton Roads Yacht Club, Bergen Beach Yacht Club and Maumee River Yacht Club. J. Norris Oliphant of the Thousand Island Yacht Club was re-elected president of the association, Anson B. Cole of the Manhasset Bay Yacht Club secretary, and J. H. McIntosh of the Columbia Yacht Club treasurer.

It has been arranged that the annual cruise shall be to Jamestown, to arrive there during the week of motor boat racing the first week in September. The route and details of the cruise have been left to the committee. For the Brooklyn races competition will be allowed during the entire summer, the boats making the best corrected time between Gravesend Bay and Hampton Roads to receive the cups. It was announced that the Thousand Islands Yacht Club had again challenged the Chippewa Yacht Club for the Gold Challenge Cup.



POPULAR TYPE 31-FOOT CABIN CRUISING MOTOR BOAT.
Exhibited by the Racine Boat Mfg. Co., Muskegon, Mich.

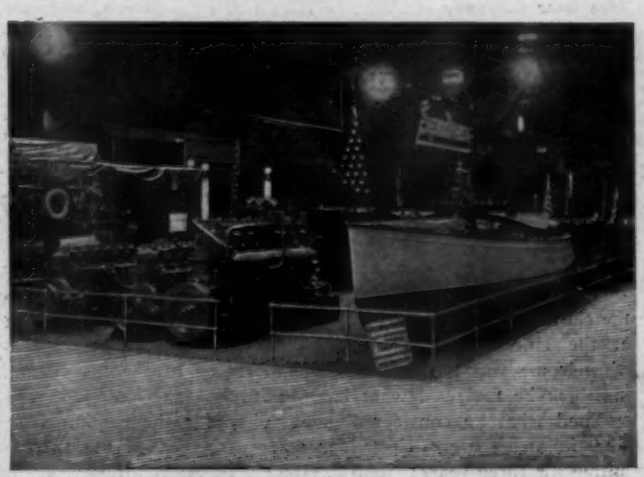
NAVY CONVERTED TO MOTOR BOAT IDEA.

Rear Admiral Coghlan, U.S.N., paid a tribute to the value of the power boat in his remarks at the beefsteak dinner of the Motor Boat Club of America at Reisenweber's last Saturday evening. He said that while the members of the club were interested in the development of the motor boat from a pleasure point of view, he took a broader view of the future of the industry. To have mentioned a gasoline motor and its use by the navy a few years ago to any prominent naval officer would have caused a shock to the officer. Now the motor boat, with its internal combustion engine, is a recognized thing in the navy, the service having realized the advantages of the motor boat as an auxiliary for light and rapid work. The Admiral said that the motor boat show had been a revelation to him and to all the officers of the navy who had visited it, and he felt that its influence would result in advancing the motor boat not only as a pleasure craft but for business use everywhere.

A CEMENT ROAD ACROSS THE COUNTRY.

INDIANAPOLIS, IND., Feb. 25.—Ezra Meeker, who has just completed a trip over the old Oregon Trail in a prairie schooner with oxen, as he did 50 years ago, is advocating a road bed of cement from the Atlantic to the Pacific.

"Those who would say that this is a chimerical scheme should be reminded that 20 years ago the electric car was unknown," says Meeker. "It is less than 60 years ago since the first railroad was built into Indianapolis, and many persons at that time shook their heads at such a 'wild scheme.'"



SPEEDWAY ENGINES AND SERVICEABLE LAUNCH.
Exhibited by the Gas Engine & Power Co., Morris Heights, N. Y.

EXHIBITORS THAT DISPLAYED THEIR WARES

THOSE WHO BUILD BOTH BOATS AND ENGINES.

The Atlantic Company.....Amesbury, Massachusetts
Electric Launch Company.....Bayonne, New Jersey
Gas Engine & Power Company.....Morris Heights, New Jersey
Grand Rapids Gas Engine & Yacht Co.....Grand Rapids, Mich.
Lamb Boat & Engine Company.....92 Chambers Street, New York
Lozier Motor Company.....55th Street and Broadway, New York
W. H. Mullen Company.....Salem, Ohio
Michigan Steel Boat Company.....Detroit, Michigan
New York Yacht, Launch & Engine Co.....Morris Heights, N. Y.
New York Kerosene Oil Engine Co.....31 Burling Slip, New York
Palmer Brothers.....242 Fourth Avenue, New York
Pioneer Boat & Pattern Company.....Bay City, Michigan
Racine Boat Manufacturing Company.....Muskegon, Michigan
Smith & Mabley, Inc.....57th Street and Broadway, New York
Stamford Motor Company.....Stamford, Connecticut
Siegel Cooper Company....18th Street and Sixth Avenue, New York
Standard Motor Construction Company.....Jersey City, New Jersey
D. M. Tuttle Company.....Canastota, New York
Truscott Boat Manufacturing Company.....St. Joseph, Michigan
Western Launch & Engine Works.....Michigan City, Indiana
Williams-Whittelsey Company.....Steinway, New York

BUILDERS OF MOTORS ONLY.

American & British Mfg. Co.....Bridgeport, Connecticut
The Art Machine Company .... Brooklyn, N. Y.
Buffalo Gasoline Motor Company.....Buffalo, New York
Brownell-Trebert Company.....Rochester, New York
Cushman Motor Company.....84 Chambers Street, New York
James Craig, Jr.....556 West 34th Street, New York
Eagles-Howard Company.....1321 Park Row, New York
Ferro Foundry & Machine Company.....Cleveland, Ohio
Fairbanks Company.....Broome Street, New York
Gray Motor Company.....Detroit, Michigan
Holmes Motor Company.....West Mystic, Connecticut
Hurd & Haggin.....36 Hudson Street, New York
International Oil Engine Company.....38 Murray Street, New York
Lackawanna Motor Company.....Newburgh, New York
McFarland Foundry & Machine Company.....Trenton, New Jersey
McMail Brainard Engine Company....Produce Exchange, New York
Merchants' Engine Company.....259 Greenwich Street, New York
New York Safety Steam Power Co....114 Liberty Street, New York
J. V. Rice, Jr., & Company.....Bordentown, New Jersey
Ramsey Engine Company.....Philadelphia, Pennsylvania
Ramsey Manufacturing Company.....Philadelphia, Pennsylvania
F. A. Seitz Company.....Newark, New Jersey
St. Clair Motor Company.....64 Broad Street, New York

IGNITION APPLIANCES.

Atwater-Kent Mfg. Co.....Philadelphia, Pennsylvania
Crown Battery Company.....47 Warren Street, New York
Dayton Electrical Company.....Dayton, Ohio
K-W Ignition Company.....Cleveland, Ohio
Lincoln Electric Company.....1 Union Square, New York
A. R. Mosler & Company.....163 West 29th Street, New York
Manhattan Electrical Supply Company....19 Park Place, New York
Motsinger Device Manufacturing Company.....Pendleton, Indiana
National Carbon Company.....Cleveland, Ohio
Pittsfield Spark Coil Company.....Pittsfield, Massachusetts
Portable Electric Safety Light Company.....Newark, New Jersey
William Roche Dry Battery Company.....Jersey City, New Jersey
Richardson Engineering Company.....Hartford, Connecticut
Chas. F. Splitdorf.....17 Vandewater Street, New York
Semi-Dry Battery Company.....Harrison, New Jersey
J. S. Battery Company .....New Rochelle, New York
Witherbee Igniter Company.....541 West 43d Street, New York

LUBRICANTS AND LUBRICATORS.

G. W. Cole Company.....141 Broadway, New York
McCord & Company.....24 Broad Street, New York
N. Y. & N. J. Lubricants Company ..14 Church Street, New York
Pedersen Manufacturing Company.....636 First Avenue, New York

REVERSING GEARS.

Gies Gear Company.....Detroit, Michigan
Perfection Reversing Gear & Supply Co....45 Vesey St., New York
Snow & Petrelli Manufacturing Company.....New Haven, Conn.

BRONZE CASTINGS, PROPELLERS, ETC.

Wm. Cramp & Sons..... ...Philadelphia, Pennsylvania
Michigan Wheel Company.....Grand Rapids, Michigan

LAMPS, HEADLIGHTS, ETC.

Richardson Engineering Company.....Hartford, Connecticut
Rose Manufacturing Company.....Philadelphia, Pennsylvania
United States Battery Company..... .....New Rochelle, N. Y.

MOTOR BOAT WHISTLES.

Watres Manufacturing Company.....1133 Broadway, New York

SUPPLY DEALERS.

C. D. Durkee & Company.....2-3 South Street, New York
Chas. E. Miller.....97 Reade Street, New York
George H. Terry Company.....92 Chambers St., New York

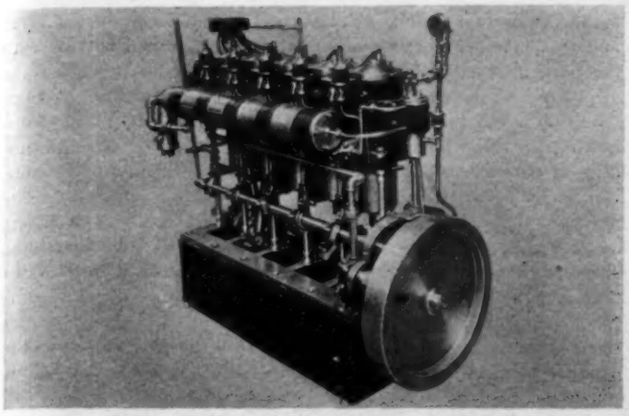
MISCELLANEOUS EXHIBITS.

Barnett-Palmer Company.....New York
Wm. Bruns.....Jersey City, New Jersey
Etna Self-Heating Food Company.....74 Broadway, New York
Energine Refining Company.....5 Beekman Street, New York
Doubleday, Page & Company.....133 16th Street, New York
Wm M. Gokey Shoe Company.....Jamestown, New York
E. R. Hodgson.....Dover, Massachusetts
J. W. S. Harding, Jr.....226 Lafayette Street, New York
Wm. Hjorth.....Jamestown, New York
Indian Exhibits Company.....138 West 42d Street, New York
Monitor Speed Recorder Company.....Cambridge, Massachusetts
Marshall Chemical Company.....80 Williams Street, New York
W. L. Munson.....874 Park Place, Brooklyn, New York
Pains Fireworks Company.....12 Park Place, New York
Sand Sons Company, A. B.....242 Water Street, New York
Sherwin, Williams Company.....66 Broadway, New York
Spicer Universal Joint Mfg. Co.....Plainfield, New Jersey
D. P. Van Gordon.....Orange, New Jersey
Sulpho-Napthol Company.....125 East 23d Street, New York

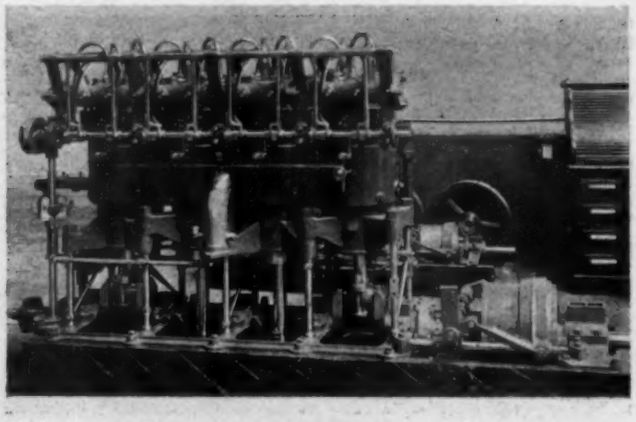
BOAT AND ENGINE BUILDERS MEET AND DISCUSS PLANS

MONDAY afternoon, February 26, the National Association of Engine and Boat Manufacturers, under whose auspices the show was held, came together for its annual business meeting at the Hotel Breslin, preceded by a luncheon. An address of welcome was made by President Amory of the association, in which he reviewed what has already been accomplished and outlined what he considered good policy for the coming year. The following were elected members of the executive committee for three years: John J. Amory, H. N. Whittlesey, W. J. Reynolds, James Truscott and Walter Ferguson, Jr.

The matter of shows was naturally to the fore, and while it has not been actually so decided, it is definitely understood that henceforth there will be an annual circuit of independent motor boat shows at New York, Chicago and Boston under the auspices of the National Association, the latter, in all probability, working in conjunction with the Western and New England associations. In connection with the motor boat carnival to be held on the Hudson River next September, it was decided definitely to hold a manufacturers' convention. The association has made arrangements to pay the transportation of out-of-town members to all meetings in order to insure bringing widely scattered interests together. Among other things discussed was that of the formation of a mechanical branch for the investigation of technical matters, also the founding of an experimental station.



DOCK FIVE-CYLINDER SELF-STARTING MOTOR.



CRAIG MOTOR FOR THE 670-MILE RACE TO BERMUDA.

FEATURES OF MOTOR DESIGN SHOWN AT GARDEN

MOTORS here, there and everywhere appear to briefly express what may really be said to constitute the *pièce de resistance* of the Motor Boat Show. There are other things shown beside motors, to be sure, but for one sharp on lines and hull construction there are twenty on engine details, and, in consequence, the mechanical end of the show has really come in for the greatest share of attention. It has fully deserved it, too, for seldom in past years has there been such an attractive array of novel things to be studied and so much to be learned as has been the case with the show just past. For obvious reasons, the building of marine motors is still far from that settled stage of standardization that has marked the automobile motor as a whole for the past year or two, and, hand in hand with its trend toward that goal, there are being developed a number of systems which promise well for the future.

Primarily, the business of building marine motors meant the two-cycle type, but with the demand for, not alone greater power but also much greater speed, the four-cycle was resorted to with such success that there is now an almost equal division of opinion on the subject, not a few makers building both types. For moderate powers and speeds, the two-cycle still reigns supreme, particularly in the smaller boats, in which class are included all those not equipped with engines of more than 20 horsepower. Over this limit the four-cycle type of engine is practically universal, and as represented at the show there were many novelties of construction to attract attention. In adopting the four-cycle type, it is particularly noticeable that designers have shown a decided leaning toward marine standards as exemplified in the steam engine, though with this exception the four-cycle motor was in the great majority of instances but an adaptation of the automobile motor to a new environment. As a matter of fact, in some instances, the engine could have been lifted out of a launch and placed directly on a car with but few minor changes, necessitated principally by the need for starting it from a distance, as where it was located under the forward deck.

Multi-Cylinder Types a Feature.

Probably the most striking feature of the showing of motors, as a whole, is the extent to which multi-cylindered engines predominate. But a few years ago, a motor having more than two cylinders was quite an exception to the general rule, and even at that it was usually a three-cylinder type, the prevailing designs being single, two and three-cylindered, and the former two far outnumbering all others. Now the four-cylinder motor is well to the fore, as the result of the adoption of the four-cycle type, and six-cylinder motors are also quite common. In fact, it may well be said to be a six-cylinder show, from the number of this type that were to be found at the various stands.

Beginning with the huge 300-horsepower six-cylinder Standard, which gained the world's record for speed in the launch of the same name, it was noticeable that there were six-cylinder engines of varying powers at the majority of the stands. At the exhibit of the Gas Engine and Power Company a six-cylinder 100-horsepower Speedway motor was running under its own power, gas being employed as the fuel. The valves are concentrated on the right hand side, the exhaust being at the lower part of the pocket and the inlet the upper, the latter operating with an overhead rocker and push rod, and the exhaust by direct thrust from the camshaft, as on the automobile type. The inlet manifold is a perfectly straight bronze tube lying parallel with and directly at the inlet valves, the carbureter being placed at the lower end of a right-angled offset at about the level of the base. Ignition is by means of an Apple dynamo and set of accumulators, the generator and water pump both being driven from an independent shaft. Duplicate ignition employing make-and-break ignitors supplied by a Simms-Bosch low-tension magneto, and the usual jump spark with an Apple ignition set, are used on the 200-horsepower six-cylinder engine shown by this firm, which has a double jet, water-jacketed carbureter supplied by a small pump, a constant level being maintained by means of an overflow.

Some Motors That Attracted Attention.

Holding the distinction of being the lightest marine motor of its power ever built, the power plant of the high-speed motorboat "Den," both the engine and hull of which were designed by Herreshoff, came in for an unusual amount of attention. It is of the four-cylinder, four-cycle type, patterned after auto practice, and complete with its reverse gear and all controlling mechanism only tips the scales at 1,200 pounds. Its dimensions are 7-inch bore and 7-inch stroke, and it is rated at 120 horsepower. These engines are built from Herreshoff designs by the American and British Manufacturing Company, Bridgeport, Conn. A six-cylinder four-cycle motor, rated at 50 horsepower and known as the H & H, combined quite a number of unusual features of design and construction that served to distinguish it. The valve mechanism was of the overhead type run from a single camshaft supported on bearings on the cylinder heads, and every part was designed to be readily dismounted. But its most interesting feature lay in the method of ignition, which was by means of a small high-frequency inductor alternator mounted directly on the timer shaft. This generated an alternating current at 122 volts, which was sent through a step-up transformer and raised to a potential of 32,000 volts, thus dispensing entirely with brushes, coils and tremblers. The Truscott motors, which were shown in a large variety of sizes and powers, also came in for favorable attention by reason of their simplicity and compactness,

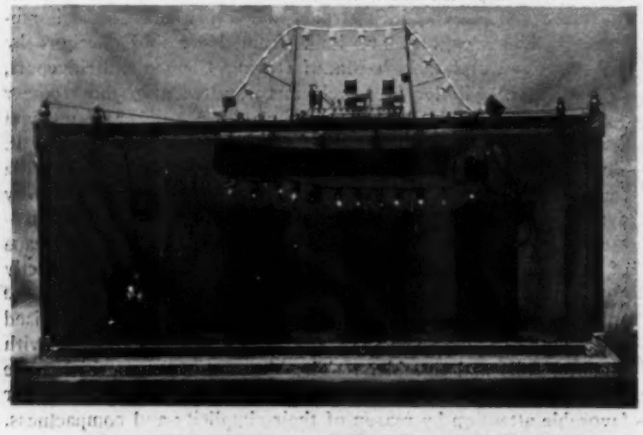
HERRESHOFF 120-H.P. MOTOR FROM THE "DEN."

as well as their apt name of "Heavy Duty." An exhibit that was a constant center of interest throughout the show was that of the Lackawanna motors, one of which was shown running a propeller in a small inclosed tank of water. The ease with which it could be reversed, whether running on the battery or a magneto, proved a surprise to the majority of spectators. This firm showed a most complete range of motors, including a very compact six-cylinder type, composed of three of their well-known units, beside which there was also on view a 12-horsepower set for stationary duty.

Compressed Air Self-Starting Device.

The self-starting Dock engine, built by the New York Safety Steam Power Company, proved to be a surprise in the shape of a five-cylinder motor of the open base marine type that combined an unusual number of meritorious features. With this number of cylinders, the cranks being at 72 degrees, the engine is never on a dead center. Starting is accomplished by means of a supply of compressed air maintained by a small air-compressor. Opening a small cock for a moment sends a stream of compressed air through the carbureter and supplies the cylinder that is in the firing position with a charge of explosive mixture under compression. Starting is facilitated by the system of ignition employed, which may aptly be termed a "constant primary circuit" type. That is, the accumulators are switched onto the single coil and left on closed circuit as long as the motor runs, the secondary current being sent to the various plugs by a special form of distributer, using no actual contacts, the current leaping to the revolving arm as it passes over the terminals. This secondary timer is constructed of hard rubber and brass and covered with a glass plate, so that its operation may be inspected at any time.

Though James Craig is a well-known builder of both six and eight-cylinder types, his exhibit only included engines of three and four cylinders, these being of the open base marine type with the superimposed valve gear that has always distinguished the products of this maker. The Holmes long-stroke "get-at-able" motor is another of the open-base type with typical marine connecting rods and method of lubrication, but is closed when running by easily removable side plates. Its fine finish and mechanical excellence attracted no end of favorable comment. The Brownell-Trebert Company, Rochester, N. Y., are also very strong advocates of the six-cylinder type, and showed both fours and sixes in their exhibit. They make both the superimposed valve type and the plain. The Buffalo Gasoline Motor Company, Buffalo, New York, showed a complete line of its models in various sizes. A novelty was the Ramsey marine engine, in which the cylinder is offset on the crankshaft the length of the crank throw.



SUBMARINE EXHIBIT OF WITHERBEE ACCUMULATORS.

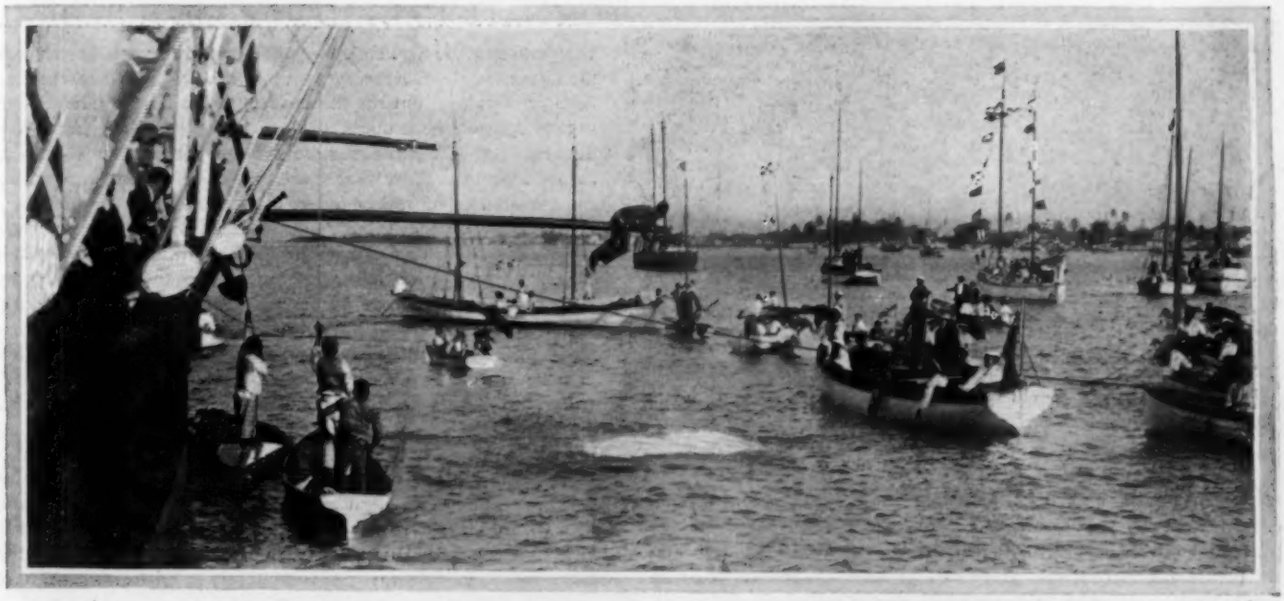
Kerosene Burning Engines in Evidence.

That considerable study is being devoted to the question of running marine engines on fuels other than gasoline was evident from the number of engines designed to run on kerosene. Chief among these was the Monarch line of engines, of which a six-cylinder type was shown. The regulation Schebler carbureter is used, the heater for vaporizing the kerosene being maintained at the proper temperature from the exhaust, the carbureter's function being merely that of spraying the fuel preparatory to vaporizing it. In this engine, electrical ignition is employed, but in another designed to use kerosene also, the incandescent system is used, an ingenious method of timing the explosion being arranged by means of an adjustable ignitor which may be raised or lowered while the engine is running.

"SIMPLEX X," A STRIKING EXAMPLE OF SPEEDY LINES.
Exhibited by Smith & Mabley Mfg. Co., New York City.

Reverse Gears and Clutches.

Prominent among the new things to be found in this field was "Joe's Gear," made by the Snow & Petrelli Manufacturing Company, New Haven, Conn. It is of the spur type, the pinions being of hardened high-grade steel, accurately cut, and running in an oil-tight case. They are only in operation on the reverse, the device revolving solidly when going ahead. The complete gear itself is extremely simple and compact, and may be applied directly to the engine shaft, making alignment easy and positive. This concern also makes marine friction clutches, which are sold independently of the gears, as well as a line of yacht cannon and brass fittings. The well-known Gies gear, made by the Gies Gear Company, Detroit, Mich., and which has been on the market so long as to scarcely need description, as well as the Perfection gear, made by the Perfection Reversing Gear and Supply Company, New York, were also shown. The latter is of the constant mesh type, both the forward and reverse drives being made through a special expanding ring friction clutch.



A GENERAL VIEW OF BEAUTIFUL NASSAU HARBOR DURING THE RECENT MOTOR BOAT CARNIVAL.

THAT "FLAG-TO-FLAG" BOAT RACE.

According to official news which comes from Miami, Fla., the Race Committee of the "Flag-to-Flag" motor boat race, Miami to Nassau, has officially declared the *Whiz*, of New Haven, Captain Norton, winner in the power boat class, and the *Daggett*, of Miami, Captain Haggerty, winner in the auxiliary yacht class. Second in the classes respectively were the *Lee S.*, of Jacksonville, and the *Klondike*, of Miami. The auxiliary *Muriel*, of Miami, chartered by several members of the New York Motor Club, which started ahead of the other racers and then claimed the contest, was disqualified. On the return trip from Nassau to Miami the boats had a lively run across the Gulf Stream, the *Daggett's* engine breaking down on the homeward journey and the *Lee S.* being required to lend a helping hand.

In a letter received from W. J. Morgan the story is told of the exciting trip of the *Muriel*, and the tale is related in the characteristic manner of the "Senator." It is herewith given:

"We certainly had a frightful trip on the *Muriel* in the Flag-to-Flag race. This 55-foot auxiliary we chartered from some Nassau people who don't know any more about navigation than I do, so the result was that it nearly fell to the lot of the editor of THE AUTOMOBILE to write some touching obituary of 'Jonah,' the 'Flash-in-the-Pan Brothers,' and yours truly. Three others, including Commodore Allen, of Daytona, and Mr. Bell and his wife, made up the chump party who trusted their lives to the green sailors. The *Muriel* had plenty of sail and a 10-horsepower motor. The motor refused to mote before we got out of Biscayne Bay, but the sails carried us across the Gulf Stream in good shape. We only went thirty miles out of our course in a forty-five-mile run. The 'navigator' blamed it upon the compass, and said the motor probably had magnetized it. If that was so, it was the only thing the motor did. At night we anchored off a bleak-looking island without a sign of life on it or even a shrub, but which had the high-sounding name of Orange Key, probably because no oranges will ever grow on it. Our experienced sailors anchored within 400 yards of this leeward shore, a thing which Commodore Allen advised me proved that they were no sailors; but you see they were running the boat and we were having a run for our lives. I had been battling with Old Neptune most of the day and he had slightly the best of it, so that after sniffing at the supper, I turned in at about 6:30.

"At 8 o'clock Spooner woke me with a cry that our anchors were dragging and that we were nearly on the rocks. Upon which I heard the surf break with a roar, when I clambered on deck with most of my clothes off, which Allen did also. If I live to be a thousand, I do not believe I ever will forget the terror of the moment as I looked at the breakers about 100 feet away and saw that our boat was slowly moving towards them. We got hold of the anchor chains and pulled for dear lives—Wetmore, Spooner, Lazarnick and Allen. We lay on the deck, pulling for our lives, and let me tell you there was not a coward among them. I thought of home, but did not fear what I thought was the final end. The anchor stuck, and I suggested to Allen that it be cut away. The crew by this time had become useless and panic stricken. Allen roared, 'Cut away those anchors or in five minutes we will be on the rocks!' Here again trouble came. The small anchor had fouled the larger one, so that they could not be run out by their chains through the hawser holes. Fortunately one of the anchors had a rope, which one of the sailors cut, and with a rattle the big chain and the rope went swishing to the bottom. At that moment a merciful wind caught the jib sail, and, as the spray was being felt on our faces from the breakers, the boat stood off from the rocks. We drifted all night, not knowing where, with no anchors, but the morning showed us that we had made no gain or loss. We fortunately anchored safely, after borrowing an anchor from a sponge vessel, and eventually arrived at Nassau, Thursday noon, being three days in crossing the 150 miles between the flags.

"We had quite an exciting experience the third day out from

GENERAL VIEW OF TOWN SHOWING GOVERNOR'S PALACE

TROPICAL "SALT CAY," OWNED BY ABRAM VAN WINKLE.

Miami. We came across a stranded whale sixty-five feet long, which we tried to capture. We forgot all about the race and drew our boat alongside of the monster. We used a shotgun and revolvers and also a long knife tied to an oar. We started him going to deep water and for our pains we ran on a bar. No liquor sold there. We did not do the fish much damage, but Spooner and Lazarnick got twelve pictures each.

"We claimed the first prize for the reason that we reached Nassau first, and it seems that it came about because the others did not start until Thursday and we began our foolish trip on Tuesday. On that morning we got away one hour late and thought all the rest had gone, for the reason that we could not get in close enough to the starting point to see if this was actually so. But as the rule said the start was to be at 7:05 A.M., we made up our minds that we were one hour late. So we went on our way to the first control, which we never reached. We now claim the prize for being d—n fools and vote each of ourselves a medal for doing something which the wise ones refused to do. If you ever catch me on a cockleshell boat with landlubbers for navigators you will please pin a rose on me."

IN 1906 THERE WERE 1,267 CARS IMPORTED.

During the year 1906, according to the official reports, 1,267 foreign cars were brought into this country, 874 of which were imported by dealers and 393 brought in by individuals. The Hol-Tan Company led all other importers, selling 155 cars in this country. The next nearest total was that of Panhard, though three firms imported them. In grand totals the Mercedes led with 208 cars, Panhards second with 203, Renault third with 162, and Fiat fourth with 159. The following table tells its own story:

Car.	By Importers.	By Individuals.	Total.
Fiat	155	4	159
Panhard	125	78	203
Mercedes	98	110	208
Rochet-Schneider	56	2	58
Darracq	54	1	55
Renault	75	87	162
C. G. V.	55	25	80
De Dietrich	36	10	46
Hotchkiss	35	11	46
Clement-Bayard	29	1	30
Berliet	29	10	39
Delaunay Belleville	27	3	30
Martini	25	5	30
Brasier	18	9	27
Italia	14	1	15
Bollee	9	27	36
English Daimler	11	1	12
Zust	9	1	10
Isotta Fraschini	7	1	8
Bianchi	2	4	6
Mors	5	2	7
	874	393	1,267

FOR NATIONAL AID IN ROAD BUILDING.

WASHINGTON, D. C., Feb. 25.—A notable good roads speech was made in the House of Representatives this week by Representative Flood, of Virginia, during the course of which he submitted a few reasons why he thought the Government should aid in the building of public roads throughout the country. The following excerpts from his address are of more than passing interest to the automobilists of the country:

"I think, undoubtedly, the power of the Government to make appropriations for the purpose of building roads is ample and can be defended. The power is expressly given to Congress by the Constitution 'to provide for the general welfare,' and the general welfare of this country demands at this time nothing so imperatively as it does a good system of public roads—a thing which we can never have without the aid of the Federal Government. The exercise of this power to aid in the building of public highways is more than 100 years old.

"There is no real distinction between a turnpike and a railroad in their claims for help from the general government. But the railroads have been aided to the extent of millions and millions of dollars in land and money by the national government, while the proposition to secure aid for the highways of the country meets with no favor beyond a respectful hearing. There is no real distinction, so far as the public good and welfare is concerned, between the aiding of public roads and the aiding of waterways, and yet our waterways and harbors have been aided to so colossal an extent as to dwarf and finally eclipse our equally valuable highways. The importance of good roads is so apparent it will not be questioned by one and need not be discussed.

"We are appropriating this year $83,000,000 for rivers and harbors, $95,000,000 for our naval establishment, and $81,500,000 for the army. The building of a comprehensive system of good roads is of more importance to the people of this country than any one or all of these purposes. The necessity for better roads in many parts of this country is the greatest need of the hour. The States and counties cannot build them. The right kind of roads can only be built, and will only be built, when the national government lends a helping hand. If we are ever to have a system of roads in this country to compare with those of the other enlightened nations of the world, it has got to be done by the aid of the Federal Government.

"All the progressive countries of Europe are giving national aid to their highways, while our government is following the example of the South American nations. What a different picture has been presented by the countries of Europe. A splendid system of roads has been inaugurated by those countries. The great Napoleon, following the example set by the Roman Empire, built an extensive system of roads throughout France, and now not less than $7,000,000 each year are expended by the French government in keeping up these roads and making new roads. The central government of England began to improve the roads in that country in 1835, and now $15,000,000 is being expended yearly upon their roads.

"While this country has advanced in area, in population and in wealth, and along all lines of science, trade and industry, no advancement has been made in the condition of our roads in many sections of the country during the past one hundred years. Let the general government foster this great enterprise, not only at the behest of justice but of wisdom."

ROAD BUILDERS' CONVENTION, MARCH 12-14.

James H. MacDonald, president of the American Road Makers' Association, says that the road builders' convention, which is to be held in Pittsburg on March 12, 13 and 14, promises to be the largest meeting of the kind ever held in this country. He says the purpose of the convention will be to unite in one big meeting all the scientific road building interests of the United States, "each commissioner to relate to the convention work that has been done and to be done in his State."

A CRUCIAL TEST OF MODERN ALLOY STEEL

By THOS. J. FAY, E.E.

OF the several grades of steel likely to be found in automobile work, but few of them will be found to possess the characteristics most to be desired, *i.e.*, the ability to withstand shock without rupturing. It is scarcely to be expected that any automobile should be collision-proof, and deformation, as a result of a collision, is a reasonable expectation; but there is a great difference as between deformation and actual rupture of parts such as may sustain direct impact. In a testing machine

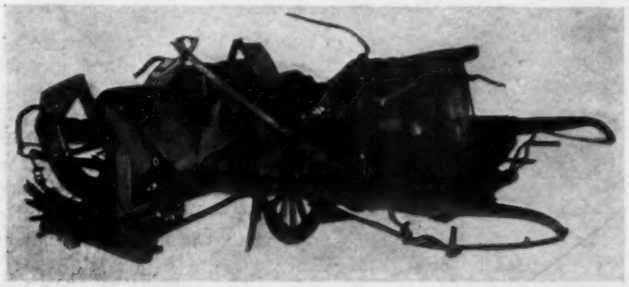


FIG. 1.—How the 60-H.P. Mercedes looked after the smash.

"proofs" are pulled until rupture takes place, and the conventional physical properties are noted; or under a "tup" proofs are subjected to repeated blows until rupture takes place, unless perchance the proof is so tenacious as to bend so much that the test must be interrupted on that account. In the "pull test" the ability of steel to withstand shock is scarcely disclosed at all, while, on the other hand, the "tup" test is a fair indication of the shock ability of steel; but it is rarely that shock tests are published, if indeed they are made, except at rare intervals.

Why Shock Tests Are Not Made.

The probable reason why shock tests are neglected is owing to the fact that steel, high in tensile value, for any given *genera* is not likely to show up well in the "tup" test, and strange at it may seem, "beautiful women use the mirror most," so to speak. On the other hand, buyers of steel cry for high tensile values, and overlook the question of shock ability, whereas steel mongers "do the diplomatic" and furnish what is demanded, or what is most in demand, at any rate. The cars that are constructed of materials, such as are known to be capable of sustaining shock, or alternate stresses, are cars with a high price tag, and it is extremely difficult, in the abstract, to tell just why one car should cost double the price of another car, if both have the same power, same weight and same capacity for passengers or burden, as the case may be.

There may be some chance for misunderstanding in relation to this matter in that some may think the ability of steel to sustain shock loads is limited to "alloy" steel, as nickel, chrome-nickel, or chrome-wolfram steel. Such a view would be fallacious in the abstract, at any rate, since all grades, or better yet, kinds, of steel are more or less possessed of this ability, depending upon (a) purity, (b) process of manufacture, (c) extent to which the product is worked, (d) skill in treatment, not to mention numerous details of more or less moment, attending the process. The great question at the present time is to bring about a more complete realization of the fact that shock ability is a much desired quality, conspicuous for its absence in much of the steel to be had at every hand.

The old wagonmaker, in his day, had the right idea, although no ready means is at hand to indicate the process by which the wagonmaker hit upon the right idea. For all anyone can tell, the process was by way of repeated failures. In any case, wagonmakers use iron and steel of a quality that *does show great ability to sustain shock loads*, and, in the case of the wagonmaker, "alloy steel" is as a foreign language to a Kentucky colonel, but the carbon is kept very low in the wagonmaker's product and the elongation is high. Of course, such steel has not a high tensile value, nor would it serve for certain parts of motor cars; hence the need of alloy steel for them; but, whether the steel is alloyed or not, it should be rated, as before stated, on a basis of its ability to sustain shock loads, without showing rupture, *even though it may deform.*

The Unusual Lesson of a Wreck.

Illustrative of what can be done by way of building cars that will sustain shocks without rupturing the members (although, as before stated, they may bend), Fig. 1 is offered as a fine example—an illustration so pertinent, in fact, as probably not to be duplicated. An inspection of this illustration will show in the foreground the twisted and distorted aggregation of what previously served as a 60-horsepower car—suitable for racing when stripped—of the regular Mercedes products. The photographs were taken directly after the accident that befell the

FIG. 2.—On the Vanderbilt Cup Course, where the Mercedes climbed the telegraph pole, continuing until it turned turtle.

car during a "trial spin" on the Vanderbilt course just before the last event. The car was going at a mile-a-minute gait in the hands of the B-L-M driver, and in turning to make a curve at full speed, the steering gear locked; ere the car could be righted, the telegraph pole, broken in half, as shown in Fig. 2, was struck, with the result that the car was piled up in a twisted and distorted mass, full one telegraph pole distance or spacing away, just as the photograph shows, excepting that some of the parts previously detached were thrown on the pile at the pole, distant from the broken pole hit by the car. Fortunately, neither of the occupants of the car was seriously injured, although they were precipitated headlong, and one of them made a flight—air line—of some 69 yards.

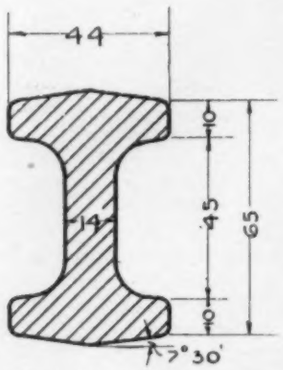


FIG. 3.—Section of Mercedes rear axle made of chrome nickel steel.

This, however, is beside the story, for the point to be made is that of all the parts in the car, nearly every one of which was deformed, *not one showed a sign of fracture*, excepting some slight damage to the motor—a fracture of the aluminum crankcase, which is to be expected in view of the properties of aluminum. The car was some three years old and ran in the first Vanderbilt race, thus adequately illustrating the fact that ample opportunity was afforded to induce "metal fatigue" long before the moment of the accident; that is, assuming "metal fatigue" would develop to any marked extent in steel so fine. The car was a 60-horsepower "Mercedes" in racing trim, and while the speed was not definitely known, it was believed that it was something like a mile in 58 seconds.

As regards the grades of material that make it possible to report such results, it will be understood a metallurgist could write a book and still have something to talk about. Lack of space forbids lengthy discussion. It will be sufficient to conclude with a statement of the shock ability of some of the steel used in this class of cars, which may be set down as follows: :

Chassis frame of C460 Krupp steel, the ability of which may be given as follows:

Physical Properties Krupp.

T.S.	E.L.	Ex-2"	Cold bending test.
100,000 lbs.	72,000 lbs.	16 per cent.	180° and flatten down.

Minimum guarantee for plates.

Diameter of proof 0.5 inch.

Deflection by Shock Krupp.

Blow No.	Deflection in inches.	Data.
1	0.79	Proof: 1.18"x1.18"x11.81"
2	1.42	Supports: 9.45" separated.
3	2.05	Weight of tup: 448 pounds.
4	2.52	Height of fall: 39.37 inches.
5	2.91	Specimen doubled after test without rupture.

This product was fully illustrated in THE AUTOMOBILE of February 7, 1907, page 277. The question of the best dimensions of side frames was not raised, and it might be well to refer to this matter at this time. Many side frame members are made 4 1-2" x 1 3-4" x 3-16" depth, width and thickness of plates, respectively. The writer is at present using dimensions as shown in Fig. 4, although it may be well to repeat that the writer uses E F 60-o Krupp chrome nickel steel, so that for C460 Krupp the thickness should be 5 m/m instead of 4 m/m for equal rigidity, and it is safe to say the difference in weight would increase one-fifth as a result.

No Ruptures Whatever Were Found.

Axles in the car of the subject were of E F 60-o Krupp chrome nickel steel, the section of the rear axle being as shown in Fig. 3. Of this material the writer has commented at length in his writings, but the opportunity to comment upon the question of ability to withstand shock has been limited, because tests of a thorough order were not easily obtainable. The axles in the wrecked car, however, surely were given much abuse, and they did deform, but they did not rupture. In fact, it would be possible to straighten out and use them again, not forgetting to subject them to an annealing process, of course. The shock ability of this particular steel is given by Krupp as follows:

Deflection by Shock Krupp.

Blow No.	Deflection in inches.	Data.
1	0.71	Proof: 1.18"x1.18"x11.81"
2	1.30	Supports: 9.45" separated.
3	1.89	Weight of tup: 448 pounds.
4	2.40	Height of fall: 39.37 inches.
5	2.80	Specimen doubled after test without rupture.

This product performs in a manner superior to C46-o Krupp steel, as a comparison of the shock tests will show, and knowing how well the axles served in practice, it is easy to fix upon a standard to go by, since the shock ability of this product is given in very precise terms. The distance rods, jackshaft, driving shaft, crankshaft, gears, and like parts, having the greatest loads to sustain are of this same steel, as indeed they should be, since some of these parts do far more work than the axles. As to why this steel so ably sustains shock loads, a word may be in order, particularly in view of the fact that it is not merely because the steel is an "alloy" product.

With a view to discussing the matter in a clear manner, the chemical composition will have to be restated, viz.: E F 60-o Krupp.

Chemical Composition Hunt.

Chromium	1.40	per cent
Nickel	3.31	" "
Carbon	0.31	" "
Silicon	0.20	" "
Sulfer	0.028	" "
Phosphorus	0.013	" "
Manganese	0.41	" "

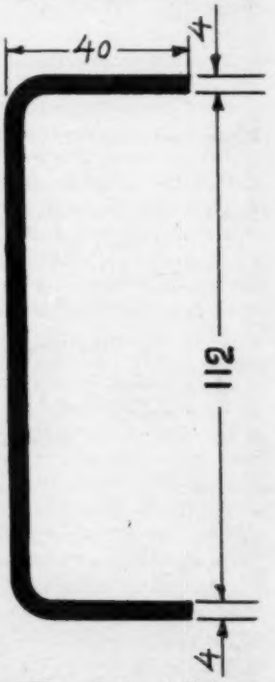


FIG. 4.—Section of side frame of chrome nickel steel.

As will be plainly seen, the phosphorus component is very low, and the sulfer is comparatively low as well, whereas the manganese is held at a moderate value. On the other hand, the high strength is not due to high carbon, nor can manganese be said to influence the strength in this instance, and so it is rational to conclude that pure metal, very low in the carbides, is rendered serviceable by the excellence of the relation between chromium, nickel and carbon, all of which is amply borne out, not only by the facts, but by the deductions that follow the tests in the conventional way, one of which tests by Hunt, at the instance of the writer, was as follows:

Physical Properties E. F. 60-o Krupp.

T.S.	E.L.	Ex-8"	Con.
109,100	81,400	23	61.8

This test is somewhat at variance with Krupp's figures, but the elongation checks up very well indeed.

Just how dirt and other foreign matter finds its way into the inner recesses of the carbureter is something that even those most familiar with such matters find difficult to explain, except by the statement that such things do get there and that is all there is to it. This being the case, the necessity for constant vigilance regarding the fuel itself, as well as occasional inspection, is apparent.

SOURCES OF ELECTRIC IGNITION CURRENT

By CHARLES B. HAYWARD.

IF it were possible to calculate the percentage of breakdowns in ignition systems that are directly traceable to each essential part, so that it could be said with any degree of certainty that the plugs failed so many times out of a hundred, the wiring so many and so on in the case of each part, such as the timer, switch and others, until the source of current was reached, it would be found that the latter generally proves to be a most prolific creator of failures. This was the case to a very great extent in the heydey of the dry cell, the percentage of failures from this cause having been very materially reduced by the adoption of accumulators and the improvement in mechanical generators. Considered from the point of view of the electrical engineer, the problem presented by the necessities of the ignition system of an automobile is positively childish in its simplicity. Taken fundamentally, it means nothing more difficult than the maintenance of a current of one or two amperes at a pressure of six to eight volts; the remainder is merely a question of providing simple and easily cared for apparatus, requiring no particular skill for its proper maintenance. As a matter of fact, modern coils and timers run on considerably less than this—or about 1-2 to 3-4 of an ampere at 6 volts, or slightly less in the case of accumulators after they have been in use some time.

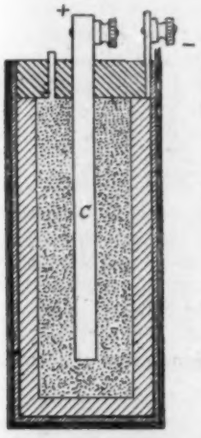


FIG. 1.—Section of dry cell.

The Old Story of Theory and Practice.

But like so many other things, this has proved to be but another instance where theory and practice have been found to disagree so radically that for a long time it seemed to be impossible to ever reconcile them. For the purposes of this article, sources of electric current may be divided into two classes, chemical and mechanical, the former including batteries of every kind, and the latter generators, such as small dynamos or the magneto. Merely to complete the list, the thermopile may be mentioned, this being a device by means of which electricity is produced directly from heat, but as it has never been brought beyond the laboratory stage, it need not be considered further, although an attempt has been made to use it for ignition purposes, employing the exhaust as the source of heat. For reasons that will at once be evident, the dry cell was selected in the first instance as the best available form of current producer. It combined cleanliness and portability with cheapness and ease of replacement, and a set of five or six cells seemed to provide all that could be desired. They produced a current at 10 to 15 amperes at 6 to 7 volts, so that, theoretically at least, they fulfilled the requirements. But pioneer automobile builders had much to learn of the peculiarities of the dry cell, and it is easy to see that progress might have been much more rapid in those first years had not many of the vagaries of the battery been attributed to the engine.

Characteristics of the Dry Cell.

As is commonly known, the dry cell is such only in name, the active solution being held by some absorbent material such as sawdust, paste or the like. Before going further, it may be explained that every battery consists of three essential elements, a negative and a positive plate or element and the exciting solution. The so-called dry cell consists of a carbon negative element in the shape of a plate and a zinc positive element, usually made in the shape of a containing case. The exciting solution is made of sal-ammoniac and water, in the proportion of about a pound of the former to half a gallon of water, the solution recrystallizing if made too strong Sawdust or special mixtures of paste are usually used to absorb it, and this is then packed between the two elements, the carbon plate being surrounded by a quantity of manganese dioxide or other depolarizing substance. In the generation of electricity by chemical means, hydrogen gas is always evolved. It is created at the positive element—the zinc in this case, and passes directly to the negative element. These terms are apt to be found somewhat confusing, as the positive element—the zinc—provides the negative terminal of the cell, and the carbon the positive terminal, though it is the negative element. The activity of the cell depends upon the rapidity with which hydrogen is evolved, but its continued working depends entirely upon how fast the gas is gotten rid of. As it comes from the positive element it passes across and the bubbles attach themselves to the negative element, insulating it from the action of the exciting fluid. When the surface of the negative element becomes entirely covered with bubbles of hydrogen, the cell is said to be polarized and its activity is seriously impaired; it seems to be dead. To overcome this to as great an extent as possible, substances having a high affinity for hydrogen are employed, which accounts for the use of manganese dioxide or similar material in the dry cell. This absorbs a large proportion of the hydrogen and greatly prolongs the active period of which the cell is capable. The dry cell is technically known as open-circuit; that is, it does not develop any energy except when called upon to do so by closing the circuit. As soon as the circuit is broken the production of hydrogen ceases and what has already been generated passes out through vent holes left in the pitch sealing at the top of the cell. It is then ready for active work again; this is generally termed recuperation, and it is the peculiarity of the dry cell that caused pioneer builders of cars untold trouble.

Early Experimenters Were Greatly Puzzled.

By reason of the fact that its excitant is not in a liquid form and consequently cannot circulate freely between the elements, the dry cell does not show the same degree of efficiency as a liquid cell of the same kind. Furthermore, it deteriorates steadily with age owing to the evaporation of the solution from the absorbent material, which cannot be totally prevented owing to the necessity for providing vents for the escape of the hydrogen. Given a perfectly fresh cell that will show 1 1-2 volts and 15 to 20 amperes on test, and place it on a short circuit for ten minutes, at the end of that time it will have scarcely enough life left to move the needle of the instrument. Tested two minutes later, it will show a surprising renewal of activity, and at the end of five or six minutes' rest will give practically the same indication as if it had not been allowed to run down. This may be repeated quite a number of times, the cell showing the same surprisingly rapid recuperation in each instance, until it begins to be exhausted by reason of the consumption of the active element of the exciting solution or by drying out. This was at the bottom of the early experimenter's troubles that were, in very many instances, laid to something else. The dry cell of that day was

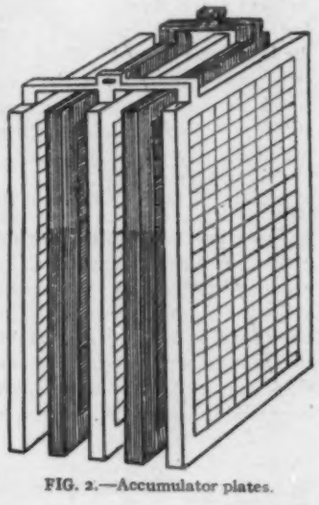


FIG. 2.—Accumulator plates.

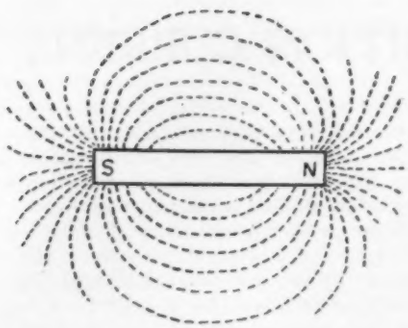


FIG. 3.—Magnetic field round a straight bar magnet

a long way from the high state of efficiency to which it has been brought in the meantime, and after the engine had been run a short time the cells no longer produced sufficient current to spark it. As they were all right not long before they were seldom suspected, and other parts of the mechanism were examined for trouble. Nothing appearing, that solace in times of perplexity —the crank—would be twisted and the battery having recovered in the meantime, the motor would start without further trouble.

Performances of this kind were repeated for a long while before the true cause of the trouble became established beyond a doubt, and then other means were resorted to, in many cases with even less success, but of these more later. In the end it was found that the dry cell, while suitable for use with single and two-cylinder engines, particularly of the slow speed horizontal types to which so much attention was devoted in this country in the early days of the industry, it was not capable of withstanding the draft made upon it by the high-speed four-cylinder engine and, though the dry cell has been vastly improved in the past few years, its use is not extended on multi-cylinder, high-speed engines, except possibly as an emergency. The dry cell is still used very largely on one and two-cylinder cars and on small motor boats. Much of the difficulty experienced with it in early days was due to the crude nature of the timing devices employed, which, in many instances, were designed to give a contact of much longer duration than was necessary to accomplish the end desired. This and other drawbacks of the apparatus that the first builders found themselves compelled to use, such as coils of very low efficiency, all combined to waste the life of the dry cell and the latter was blamed. When the high-speed, four-cylinder engine came into vogue it soon became apparent that, even at normal speed, the number of contacts per minute was so great as to constitute an almost continuous draft on the battery, a service for which the dry cell is not fitted.

Other Chemical Sources of Current.

There are numerous other methods of producing an electric current by chemical means, all of which are generally classed as primary batteries, as the current is generated directly from the action of chemicals on metals, but they are all open to the same objections as the dry cell, beside which they have other disadvantages, such as high first cost, noxious character of the solutions employed, and the like. Suffice it to say, no attempt has ever been made to utilize them for automobile work. This narrows the field of chemical current producers down to the dry cell and the accumulator. The latter is the result of many years of experimenting and investigation and forms a subject that cannot be treated at sufficient length under this heading, so that merely an outline of its characteristics will be given here, and a chapter devoted to it later. All storage batteries are classed as secondary cells because an electric current must first be passed through them. They do not generate electricity as does a primary cell. In the popular sense, they store electricity which may again be drawn forth when required, but, as a matter of fact, the process is wholly one of chemical conversion and reconversion, the current passed through them in the first instance constituting the excitant. Early types of storage batteries were, in fact, made in this way. The lead plates which constitute the elements were scored or nicked and placed directly in the acid solution; they were then "formed" by passing and repassing a current through them in different directions until a sufficiently heavy deposit of the required chemicals made their appearance on the plates. Modern accumulators are made with cast lead grids, much ingenuity being displayed in the design of the latter by various manufacturers.

As is the case with a primary cell, an accumulator consists of a positive and negative element and an exciting solution, usually termed the electrolyte. Any cell which is capable of regeneration after exhaustion by passing an electric current through it is an accumulator, but as the lead plate type is the only one in general commercial use it alone will be considered. The positive elements consist of peroxide of lead and the negative of metallic lead in a spongy form so as to be pervious to the electrolyte, which is a dilute solution of sulphuric acid and water. The plates can be readily distinguished by their colors, the positive plate being a chocolate shade while the negative is a light gray. It is also easy to distinguish them by their number, as there is always one more negative than positive plates. Under modern methods these plates are made in the form of grids containing recesses or pockets into which the chemicals are pasted or pressed forcibly, so that they will not shake loose nor disintegrate owing to the action of the cell. Briefly expressed, the theory of the accumulator is about as follows: when the battery is discharging the current passing through it decomposes the water of the electrolyte, forming hydrogen and oxygen, the former at the positive plate and the latter at the negative. These gases again recombine to form water to a small extent, the oxidization for the most part, however, resulting in the formation of lead sulphate. As this substance is practically an insulator, it is evident that discharging a cell until its elements were converted into lead sulphate would render it absolutely worthless. There is, in consequence, a limit beyond which a cell should not be discharged. Up to this point the formation of lead sulphate is small enough to be negligible, the resistance of the cell not being unduly raised, thus permitting the passage of the recharging current and the reconversion of the elements and electrolyte to their original form, there naturally always being a

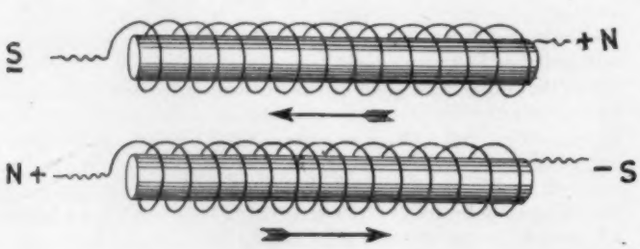
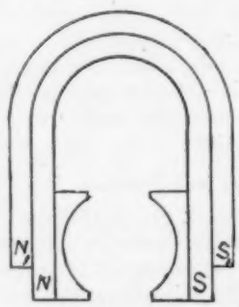
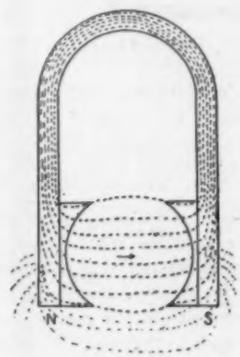


FIG. 4.—Illustrating principle of the electro-magnet.



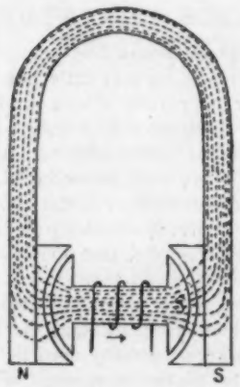
A

FIG. 5.—Magnetic field of a magneto.



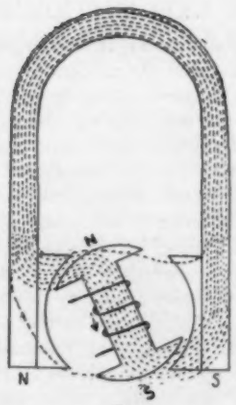
B

FIG. 6.—Magnetic circuit and lines of force.



C

FIG. 7.—Magnetic circuit after inserting armature.



D

FIG. 8.—Position of maximum induction.

slight loss every time this takes place. Both the theory and practice of the accumulator with regard to ignition needs will be taken up at greater length in a subsequent article, an attempt being made to clear up those points upon which questions are most frequently asked by the uninitiated.

Mechanical Forms of Generators.

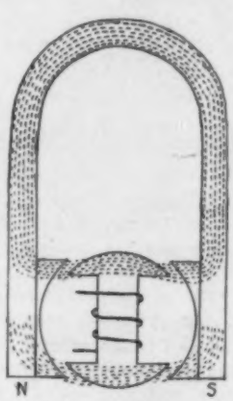
It seems strange at first sight that the average layman should accept the generation of electricity by chemical means as a fact not to be wondered at, and still regard its production by purely mechanical means as a mystery beyond his comprehension. The principles underlying the subject are few and readily understood when taken in connection with the facts concerning the characteristics of electric currents, already explained at some length. Magnetism and electricity are manifestations of an unknown force that are very closely related; whether they are in fact one and the same has not been established to a certainty. For our purpose, it will suffice to say that they are interchangeable quantities, though magnetism is producible by means other than an electric current directly applied. Probably the most familiar form of the magnet is the horseshoe-shaped toy of schoolboy days that would pick up some pins and not others, simply because they were brass, and that had such an odd effect on the needle of a pocket compass. This was because the needle was itself a magnet, and its action was merely an illustration of the fundamental principle that opposite poles attract and like poles repel one another, every magnet consisting of a north and south pole. When the north pole of the magnet was brought close to the northwardly pointing end of the needle, the latter swung quickly away on its pivot, but when the north pole of the magnet was placed close to the south pole of the needle they attracted one another and remained stationary at the point at which the magnet was held.

The action of this invisible and mysterious power is most readily explained by a very simple experiment. Spread some fine iron filings on a thin sheet of glass or paper and then bring an ordinary magnet up against the underside of it; the particles of iron will immediately arrange themselves in symmetric lines radiating from each of the poles of the magnet, illustrating graphically the direction in which the force is exerted. These lines have been technically designated as lines of force. Many schoolboys wondered what the small piece of metal, usually termed the "keeper," that came with the magnet was for, and promptly proceeded to lose it or throw it away. In time that magnet became so weak that it traveled the same road. While these lines of force radiate in the manner shown, they also travel in a circuit the same as a current, and if there be a gap between the poles much of the magnetism will be dissipated. It is commonly said to "leak away." Just what becomes of it is a mystery, but it is well known that unless the gap between the poles be occupied by some magnetic material such as iron or steel the magnet becomes weaker with age. This piece is technically termed an armature.

The first fundamental principle that illustrates the interchangeability, to so speak, of electricity and magnetism is the fact that if an electric current be passed through a wire wound about a piece of iron or steel the latter immediately becomes magnetic. In the former case this disappears as soon as the current stops, but in the latter a large part of the magnetism is retained, this being a property of steel that makes possible the manufacture of what are known as permanent magnets such as the toys referred to. On the other hand, if a magnet be brought close to a coil of wire or passed by or through it, an electric current is induced in the wire. This, in brief, represents the fundamental principles upon which the generation of electricity by mechanical means rests.

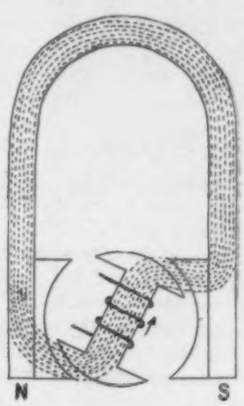
How These Principles Are Employed.

The manner in which these principles are taken advantage of practically is most easily explained by a reference to the magneto, as it is the simplest form of generator. Its two principal parts are known as the field and the armature, the former being illustrated by the sketch A. A compound magnet is used, one being placed over the other in order to increase the strength. The semi-circular blocks placed at the poles are termed pole pieces and are made in this form in order to closely embrace the armature which revolves between them. The direction of the so-called lines of force in such a combination are illustrated by B, and the manner in which the insertion of the armature affects them is shown at C. This armature in the great majority of magnetos is an H-shaped piece of soft cast iron, the recesses of which are filled with a winding of insulated copper wire. As shown at C, the armature is in what is termed the neutral position; the magnetic flux, or flow, is greatest but it is unimpeded and practically no current is generated; in other words, this is a dead point. The direction of the magnetic flux is indicated by the arrow, which also shows the direction in which the armature is revolved, that is, to the right, or clockwise. As shown at D, the armature has been given a quarter turn; although the magnetic flux is indicated as accommodating itself to the changed position of the armature, the latter is in reality cutting the lines of force, and at this point the current flow is at the maximum, starting when the edge of the armature first rises above the pole pieces, increasing until it is in the position shown at D and subsiding in the same ratio as it continues to turn, until it is again at a neutral or dead point, as shown at E. The same process is then repeated as the armature is revolved through the second half of its revolution. At F it is again shown cutting the greatest possible number of the magnetic lines of force and the current induced is again at a maximum, but the polarity of the magnet represented by the armature having reversed its relation to the polarity of the permanent magnet, the direction of the induced current is also reversed, so that the output of the machine is what is known as an alternating current. The passage of the armature past the maximum point shown at D induces a pulsation of current in one direction and,



E

FIG. 9.—Electric "dead center" of the magneto.



F

FIG. 10.—Second position of maximum induction.

as shown at F, in the opposite direction. To illustrate the principle that like magnetic poles repel and opposite poles attract, it may be assumed that a current is sent through the magneto and it is run as a motor. If the current were switched on with the armature shown in the position at C, it would not start revolving, as it is at what may be termed a magnetic dead center. But if given a quarter turn, as shown at D, it would immediately begin to turn. The north pole of the armature would repel that of the field and in moving away from it would come within the influence of the south pole of the field and be attracted, the same process going on at the other poles. If the current were sent through it in the other direction the polarity of the armature would be reversed, the upper end of it, as shown at D, then becoming south and attracting the north pole of the field so that the armature would begin to revolve toward the left. This also illustrates the interchangeability of most forms of current producers, in that when revolved mechanically they generate an electric current, and when the latter is sent through them they convert it into mechanical energy.

The dynamo or direct current generator is somewhat more complicated in that both its field and armature are electro-magnets. Both are wound with coils of wire and the current induced in each depends entirely upon the number of turns and the speed at which the armature is revolved, the latter of which reasons accounts for the fact that it is usually more difficult to start a motor when a dynamo is used for generating the ignition current than where a magneto is used. In the dynamo, also, the current generated is alternating, but it is converted into a direct current by the commutator. Both of these forms of current generating apparatus will be dealt with at length separately. The next part of this article will deal with the accumulator more in detail.

WHY THE ENGINEERS MEET IN INDIANA.

INDIANAPOLIS, IND., Feb. 25.—The semi-annual meeting of the American Society of Mechanical Engineers will be held in this city. The date of the meeting will be from May 28 to 30. One reason for choosing Indianapolis as the meeting place was that it has seven large automobile factories, with 18 additional factories in cities and towns adjoining. The number that will attend is variously estimated at from 500 to 800 persons, although the membership numbers almost 2,500 persons. On Thursday evening the banquet and reception will be given, and on Friday the visitors will be the guests of Purdue University, at Lafayette, where there are elaborate mechanical laboratories and an automobile testing plant.

All sessions will be held in the Claypool Hotel. E. R. Whittemore is chairman of the local committee on arrangements, and on the subcommittees the following chairmen have been named: Entertainment of visiting women, W. E. Sharpe; hotels, W. G. Wall, of the National Motor Vehicle Company; finance, L. M. Wainwright, of the Diamond Chain Manufacturing Company; entertainment, H. H. Rice, of the Pope Motor Car Company, and printing and press, Theodore Weinshank.

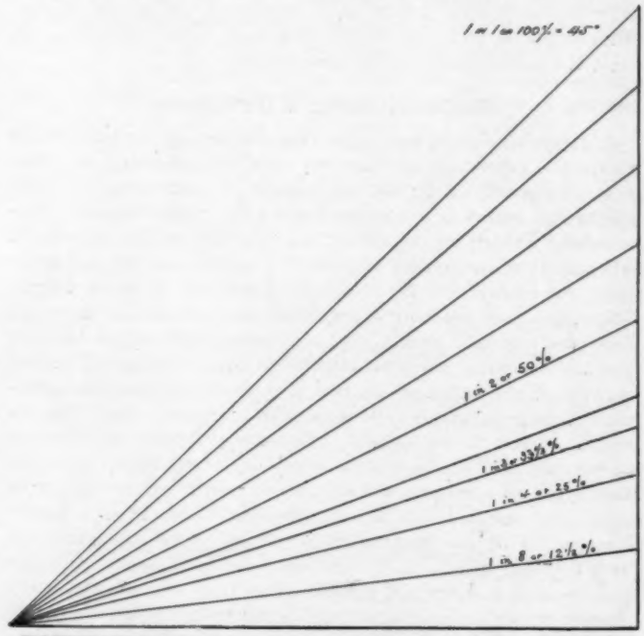
MANY AUTO STAGE LINES IN SOUTHWEST.

AMARILLO, TEX., Feb. 25.—Plans are now being made, which it is very evident will be fulfilled, for an auto line between Amarillo, Tex., and Tuscumcari, N. M. A. R. Carter, of Tuscumcari, has been in the city several times lately and has just gone over the route proposed for the line in an Orient buckboard, making a survey for the route of the line. The auto trip will be made over the route of the unfinished Choctaw extension west. There are few difficulties in the shape of bad and rough ground on the line proposed, and the promoters claim that the demand, both on account of passenger service and mail, will amply pay for the line. So far as can be learned, no machines have been purchased yet, nor is it known just what particular make is favored, but it is understood that a well-known American car will be employed.

AN EXPLANATION OF GRADE PERCENTAGES.

It is evident from the number of questions that continually crop up on the subject of grade percentages that little has been done toward removing the popular impression that a grade of 100 per cent. represents infinity, or a perpendicular line, despite the frequency with which the matter has been explained. There are two ways of stating the rise of a gradient, either in relative travel, which is more commonly used abroad than in this country, and in terms of percentage. The basic principle underlying either is the same, but it will doubtless be conceded that the English method conveys a better idea to the lay mind than does a percentage, particularly as the point upon which the greatest amount of ignorance exists is that upon which the percentage is calculated. The method of calculating grades generally used by civil engineers is graphically explained by the accompanying sketch. This represents a right-angled isosceles triangle, the base of which represents distance traveled horizontally and the upright side, distance traveled perpendicularly, while the sloping lines illustrate various grades.

If it be assumed that the base of the triangle represents a line 1,000 feet long and that the first sloping line represents a road



ILLUSTRATING METHOD OF CALCULATING GRADE PERCENTAGES.

having a rise that brings it 125 feet above the starting point, this is figured as 125 feet in a thousand, or 12 1-2 per cent. In other words, one foot of rise for every eight feet, but the latter distance does not mean distance actually traveled by a car in ascending such a slope, but distance measured horizontally with reference to that slope. The grade is measured by the tangent of the angle of inclination and not by its sine, so that a grade which represents 100 per cent. corresponds to an angle of inclination of but 45 degrees, and not 90 degrees, or perpendicular, as is commonly supposed. At the upper end of the next sloping line the elevation would amount to 250 feet, which is equivalent to a rise of one foot for every four feet traveled horizontally. So one in three corresponds to a 33 1-3 per cent. grade, one in two, to a 50 per cent. grade, and so on until a 100 per cent. grade is reached, which, as noted, is the equivalent of a 45 degree angle.

Closely connected with this is the question of how steep a grade can be overcome by a car, but as must be apparent it is one involving more than one factor, though in the end the chief consideration is that of the force of gravity. The first question is that of traction, and given this essential by providing a good road surface, very steep hills can be climbed, but sooner or later a point is reached where gravity rises superior to all other forces.

KEEPING THE MUD UNDER CONTROL

MUD, like poverty, is always with us. Its total abolition does not yet appear to be within the range of possibility; much, however, can be done to diminish this unwelcome companion, and whatever efforts are made will always be welcomed by the automobilist. One of the leading French body builders has given the results of his experiments in this direction in the columns of *La Vie Automobile*. The splashing of an automobile may be due to either its own wheels or those of other vehicles passing it on the road. Generally the automobilist is content to protect his own vehicle and is little concerned if his devices have as result the throwing of a stream of mud on foot passengers or other automobiles. There is no reason, however, why he should not only protect himself and at the same time prevent his mud striking his neighbors.

Mud splashes from the rear wheels are easily dealt with. Round mud guards, concentric with the wheel, or slightly eccentric, in order to increase the side entrance, practically resolve the question so far as the car is concerned. They do not, however, protect passers-by, and it is a pity that more attention is not paid to

FIG. 1.—How road users are splashed. A leather shield is the remedy.

this, for by carrying the mud guards further round and fixing a leather splasher loaded on its lower end, all inconvenience to other users of the road would be abolished. When the wheels are very far to the rear, or the body is short, it often happens that the guard is not inclosed by the body, and in this case it is necessary to inclose the interior of the guard by a shield. Round mud guards have the serious inconvenience of being in the way when attention has to be given to the tires. For this reason many automobilists prefer mud guards with a raised rear. To be effective this type of mud guard should extend beyond the rearmost portion of the wheel at least nine inches. Even then it will not prevent splashing of other users of the road.

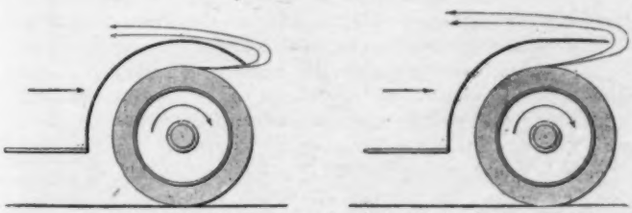


FIG. 2.—An effective front guard. An ineffective front guard.

The problem of the front wheel is more complex, owing to the mobility of the wheels which distribute their crown of mud in every direction within their angle of turn. The particles of mud carried up by these wheels are drawn from their surface by centrifugal force and thrown according to the tangent of the wheel at the point where they leave it. They are driven rearwards by the wind and finally sucked in different directions by the air currents formed by the car.

The passage of the mud can be considered under four distinct heads, according to whether it goes under the front guard, is stopped by the guard below the chassis, above the chassis, or passes in front of the mud guard. Considering the right front wheel only, for the principle is the same in the case of all the others, when mud passes under the front guard it is largely thrown under the footboard if the car is running in a straight line. If the vehicle turns to the right it goes under the chassis; if it turns to the left it is thrown outwards. To stop this shower of mud all that is necessary in the majority of cases is a leather

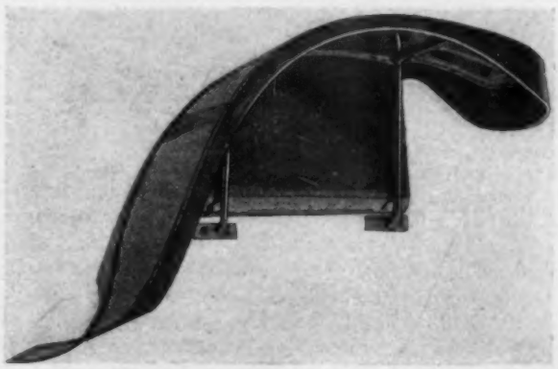


FIG. 3.—This type of guard prevents all splashing.

splasher stiffened at its base. It is this column of mud which causes the most trouble, for it is increased by the splashing caused by the falling of the wheel into occasional pools of water. This splasher thus cuts the column at its base. If the car turns to the right the direction of the column should be under the chassis, but it is thrown back by the strong current of air constantly passing under the machine from front to rear, caused by the displacement of the radiator, the front mud guards and the lower portion of the wheels. This current escapes not only at the rear, but at the two sides between the wheels. Driven from under the chassis, the mud spreads out on the outer side of the guards, splashes on the sides of the car and finally falls on the footboard. To stop these projections the space between the footboard and the chassis should be entirely inclosed by a shield which should be clean-cut, make no noise and be easily dismountable. It may be either in metal or in leather, though the latter is not to be recommended on account of its tendency to crack after a certain length of time as a result of its proximity to the hot exhaust and its continual soaking in water. Metal, on the other hand, gives perfect satisfaction; as will be seen by the accompanying illustration, it has the further advantage of hiding such inelegant organs as lubricating pipes, exhaust box and pipe, lower part of crankcase, etc.

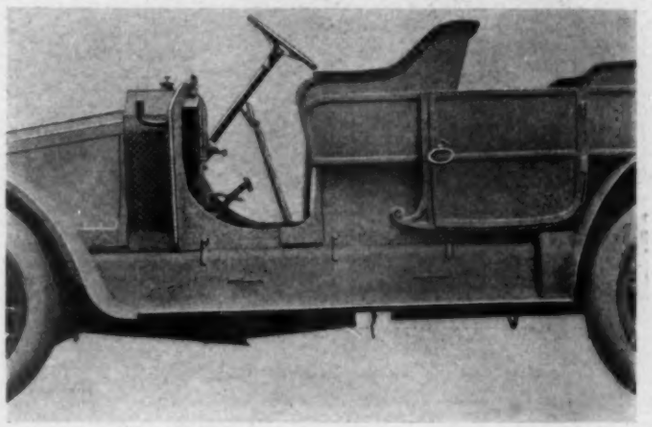


FIG. 4.—A shield between frame and footboard is clean and neat.

If the automobile turns to the left, a column of mud is thrown outwards, but is again thrown back on the car by exterior air

currents. The mud splashing outside the action of the guards is thrown back on the body and spreads itself out on the rear mud guard, the panels and the footboard. To prevent this a 1 1-2-inch descending flange should be fixed along the entire outside edge of the front mud guard. All that has been said of the first column applies to the second, mud stopped by the guard below the chassis; for the third column—that in which the mud strikes the guard on its upper surface—it is advisable to inclose the interior of the guard by a metal shield which will completely protect the hood and the dashboard. Other projections will be stopped by the guard and its exterior border.

A final column has to be discussed, that which strikes the lamps and afterwards falls on the car. To get the best protection against this the guard should be entirely concentric to the wheel and be carried forward as far as possible. To obtain perfect protection against front and side splashes, carry the side flange forward, increasing its depth to the maximum with due allowance for the play of the wheel. When the front guards are carried far forward it may be necessary to specially shape them to accommodate the lamps. To lengthen the life of mud guards they should be mounted on the chassis, where they get the advantage of the springs, and never directly on the wheels. If fitted up in this way an automobile can face the muddiest roads, travel at a rapid rate and return to the garage without any other mud than that thrown up by passing vehicles.

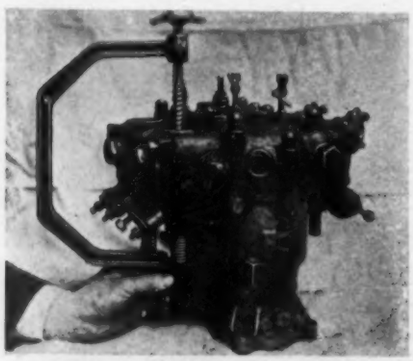
HOW TO GRIND HIGH SPEED TOOLS.

From *THE MECHANICAL WORLD.*

High-speed steel tools can be ruined very easily in the machine shop by grinding them on the emery wheel until they get hot and then plunging them into water. After doing this, the cutting edge of the tools will be found full of cracks. An American writer cites the case of a machine foreman who complained that the tool dresser was cracking the tools in hardening, but a careful investigation showed that the tools had been cracked by grinding in this way. The man was instructed how to grind the high-speed tools properly, and that put an end to the trouble from cracks in the tools.

A NEW AND EFFECTIVE VALVE TOOL.

An improved method of dismounting and grinding automobile valves is made possible by the tool illustrated herewith. By its use any person can dismount a valve entirely unaided, and without fatigue, simplicity being one of the good features of the tool. As shown in the illustration, the valve spring has been contracted by simply screwing down the screw bolt, and the cotter pin is about to be withdrawn. To use the same tool for grinding valves, a kind of screwdriver is inserted in the opening at the base of the tool and held in position by a set screw, the appliance being then used as a brace, and the valve ground with much more ease than by the usual methods.

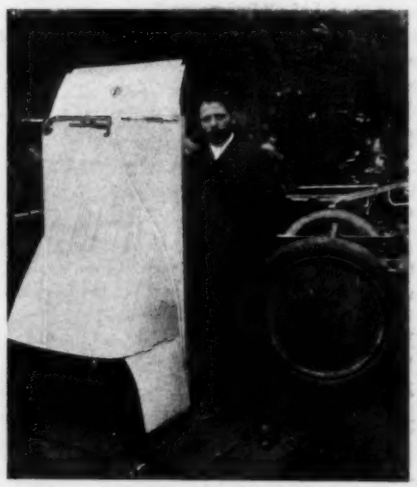


VALVE TOOL IN WORKING POSITION.

The tool is a French invention, placed on the market by M. Etienne Baudot, 231 Boulevard Pereire, Paris. It has been well received by French chauffeurs, and is already in use in a large number of garages. Although specially designed for the typical type of French motor shown in the illustration, and not adapted to certain American engines, the tool is certain to be adopted in this country.

A FAMOUS PIONEER MANUFACTURER.

Leon Serpollet, whose death was announced in a recent number of THE AUTOMOBILE, at the age of forty-eight years, gave proof of mechanical genius when a youth of seventeen. At this early age he built, entirely unaided, a curious wooden tricycle. At the age of twenty-three he had devised his first steam automobile, and in order to more profitably work out his idea removed from his native town of Culoz to Paris. He rented a small workshop and labored diligently at his new machines. His first motor-driven vehicle was a steam tricycle with which, in 1888, he traveled from Paris to St. Germain, a distance of about ten miles. It was a curious single-seated structure with the engine carried behind the driver and had an unfortunate habit of overturning when rounding corners. At that time automobilists were an unknown quantity, and when Serpollet made application to the authorities for a license to drive his vehicle on the public highway he had to wait two years for the document. The license is dated April 17, 1891, and is the first driving certificate issued by the French authorities. After the single-seated tricycle came a larger two-seated machine with wooden wheels and engine in the rear and under the body. The most famous voyage on this machine was from Paris to Lyons, accompanied by M. Ernest Archdeacon, of aeronautic fame. Serpollet caused a sensation at this time by climbing the Montmartre hill at Paris, which has a grade of 17 per cent. In 1889 his first four-seated steam automobile was built at the Peugeot factory, and was exposed at the Paris exposition of the same year. From this time his success was rapid. His engines were adopted by the Paris Omnibus Company, and the extent of his business increased enormously. Partnership was entered into with Frank Gardner, under the title of Gardner-Serpollet, with works at Paris. About this time Serpollet gained considerable notoriety as a speed champion. In 1893, with a steamer which was christened the *Easter Egg*, he was the first to attain a speed of 75 miles an hour. For three years in succession he held the Henri de Rothschild Cup for speed records on the Boulevard des Anglais at Nice. At the end of last year Serpollet united with M. Darracq, in a combination known as the Darracq-Serpollet Company. Plans were laid for doing business on a gigantic scale, and it is probable that the company would revolutionize public transport service in Europe. Just as the works were nearing completion and at the time when Serpollet's name was on everyone's lips, a short illness carried him off in the prime of his career. The funeral service was attended by a huge crowd of automobilists and the general public.



SERPOLLET IN HIS PARIS FACTORY.

Rollin H. White cabled a message of sympathy to the family of the late Leon Serpollet. The two men were firm friends and had much in common, for M. Serpollet upheld the reputation of the steam car in France just as Mr. White did in America and other parts of the world. Both worked along the lines of entirely eliminating the boiler and both were successful, although accomplishing their ends in an entirely different way. The best indication that their respective inventions were in no way alike is afforded by the fact that Rollin White secured patents in France on his generator and the several regulating and auxiliary devices, without in any way coming in conflict with the Serpollet patents.

LETTERS INTERESTING AND INSTRUCTIVE

Value of the Auxiliary Exhaust.

Editor THE AUTOMOBILE:

[597.]—As an automobile user, I like to keep closely in touch with everything pertaining to the motor-propelled conveyance, and one of the details of gasoline-engine construction, concerning which I have somewhat of a hobby, is the auxiliary exhaust port. I cannot see why this feature is not more widely applied, since it unquestionably helps the cooling materially, besides appreciably increasing power and conferring other advantages. And surely it is simple enough. I am now running a car that was originally built in accordance with standard ideas of design, but to which I afterwards had auxiliary exhausts provided. The results have been in every way most satisfactory, with the natural consequence that I am unable to see why the same idea should not be applied to every engine built—air or water-cooled. Surely, the modern automobile engine is not so perfect that even the least possible improvement can be disregarded. OTTO LEPPANEN.

Cheyenne, Wyo.

There is no question but that the auxiliary exhaust possesses considerable merits, among which are the ones you enumerate, but, like everything else, it also has objections. For one thing, unless some special arrangement is made to prevent this, oil is likely to blow out through the auxiliary exhaust port, thus wasting the lubricant as well as fouling the exhaust passages. As for simplicity it is true that a plain opening in the cylinder wall is hardly to be condemned as objectionable, but what about the extra piping required to connect it up with the muffler? And what about the further fact that in its most successful form, as applied to a well-known American air-cooled car, it is not deemed expedient to use it without a poppet valve to control its action? Nevertheless, it is of undoubted advantage as an aid to air-cooling, and there is now at least one American water-cooled car to which it is regularly applied, though it has been tried and discarded by prominent makes in the past. One of its greatest advantages is the relief it affords the regular exhaust valve from the onerous duties ordinarily imposed upon it. Not only is the major portion of the cylinderful of hot gases let out through auxiliary opening—what is left is greatly cooled by the consequent expansion before it passes out by way of the normal exhaust valve. The value of this effect is well attested by the immunity from pitting and warping enjoyed by the exhaust valves of engines equipped with the auxiliary relief.

Dismountable Rims and Removable Rims.

Editor THE AUTOMOBILE:

[598.]—Will you please tell me, through the columns of your interesting periodical, what, strictly speaking, should be understood by "removable rim." Insofar as I have observed, the term first came into use in this country immediately after the winning of the Grand Prix last year, by a Renault car equipped with a device allowing the removal and replacement of complete, inflated tires. Now, however, "removable rim" seems to be used indiscriminately, not only in the sense just referred to, but also to denote that class of constructions simply facilitating the removal of the tire by some system of mechanical dismounting. In "The Automobile," as well as in other periodicals, I note that advertisers of systems of mechanical tire attachment do not hesitate to refer to their devices as "removable rims," even going so far as to point a direct analogy in pictures and text, when no such analogy exists. Is this not unwise, as well as unfair to the less well-informed portion of the automobile-using public, and could not some sort of concerted action be taken to create a nomenclature dealing with this subject, which could be by no possibility misunderstood?

Reno, Nev. CHRIS. ELKINSON.

There is, undoubtedly, more or less of the misunderstanding you refer to, and, of course, there may be occasional instances of mild misrepresentation founded upon an indefinite use of terms that lack to begin with any clear definition. But it is scarcely possible to force usage, so we all must be content to wait until the situation clears itself in a natural manner. Already there is a tendency to apply the term "dismountable rim" to the type permitting the manipulation of inflated tire units, leaving "removable rim" to the other construction.

A Motor "Down By the Head."

Editor THE AUTOMOBILE:

[599.]—Was glad to see my letter (No. 538) published in "The Automobile" of January 24. In answer to your inquiries, would say that I am sure the first cylinder gets more oil, for the reason that the spark plug in the said cylinder is always foul. Just the other day I was troubled with this cylinder missing fire, and when I went to take the plug out I found that the oil had worked around the plug, and was even on top of the cylinder. There is no serious overheating, scoring of cylinders or seizing of pistons. The oil I have been using is mobiloil A. I have this trouble all the time, even on the level. I am not sure that I keep a high enough oil level in the crankcase. I always feed enough oil so that there is a slight smoke at the exhaust. Do you think it advisable to drill a small hole at the bottom of the crankcase partition? JOSEPH O. THOMAS.

Raleigh, N. C.

There appears to be no doubt of the fact that there is constantly an excess of oil in the forward part of the crankcase, and as everything else seems to be in proper condition, the only logical conclusion possible under the circumstances is that the engine on your car has either not been properly leveled or something has happened to the car "to bring it down by the head," to use a nautical expression. Try a level on it and see if this is not the case, making the test both with the car empty and with the passengers aboard, as the weight of the latter may account for the difference if examination should prove the engine to be level with the car empty. If the forward part of the engine is lower than the rear end, drilling a hole through the crankcase partition will serve to equalize the level to a greater extent than is possible where the partition at present keeps most of the oil forward of it, but there will still be too much oil in the forward end. The best remedy will be to level the engine. The set of the springs may be at fault.

Data Wanted on Engine Testing.

Editor THE AUTOMOBILE:

[600.]—As an occasional reader of your paper would it be asking too much of you to lend me a little assistance in the matter of obtaining data and formula which will give accurately the brake test and apparatus necessary to make same for an air-cooled single and four-cylinder engine. I have an experimental plant at my local address, and these are my first products. I am now desirous of obtaining an accurate estimate of the power developed by my engine, which is of the four-cycle type without any carbureter or mixing valve, only valve-inlet being used. These original features, together with numerous others on which I hold patents, give me a great advantage, and, I believe, much higher efficiency than the modern automobile engine. It only remains to find some adequate means of measuring this power. Can you suggest some A-1 text or handbook which gives in detail light on the subject of Prony brake tests? A. G. RONAN.

Toronto, Ont.

While a great deal has been written on the subject of engine testing in the shape of monographs and magazine articles, so far as we have been able to ascertain, there is no hand or textbook on the subject extant. Practically every volume on the gas engine includes a chapter or two on this subject, such as "The Gas Engine," by Hutton, or the "Gas Engine Handbook," by E. W. Roberts. We should be pleased to learn the result of your tests.

The Geared-flywheel Idea.

Editor THE AUTOMOBILE:

[601.]—With the present straining for lightness and efficiency in automobile engines, how does it happen that no one ever seems to think of applying a flywheel driven by multiplying gears off the crankshaft, instead of directly mounted upon it? It seems to me that the obvious advantages of a great balancing effect with a very light weight would be secured in this way, because by making the flywheel small and running it much faster than the engine, it would do all that could be done by a larger wheel. And, besides its smallness, it could be so raised above the crankshaft that it would have less of a tendency to reduce the road clear-

ance than is present with the ordinary construction. Of course, the complication would be slightly increased, but I cannot see why two simple gears and a couple of extra bearings should stand in the way of the other advantages. I understand that the flywheels of many of the best automobiles weigh 100 pounds or more, and certainly, anything ought to be desirable that would eliminate three-quarters of this or more, in this way adding just that much to carrying capacity. H. H. WEBB.

Garden City, L. I.

Every fact that can be urged in favor of the geared flywheel, except one, is in favor of it. That one, however, is sufficient to condemn it. It has been proved again and again, by tests and experiments made by the ablest engineers, that it is impossible to make gearing so perfect that it will run smoothly and continue to run smoothly without backlash or lost motion. And when it is realized that 1-500 of an inch play between a flywheel and the shaft on which it is mounted will occasion all sorts of serious trouble, due to the frequent reversal of stresses, it can be understood that gearing interposed between the power-developing element and the balancing element is hopelessly impracticable. The best results have been secured with herringbone gears, but even with these no real success has been achieved.

How to Clean Out a Radiator.

Editor THE AUTOMOBILE:

[602.]—I have been trying to find an article on cleaning out radiators in the back numbers of "The Automobile," but do not recall the date, and have been unable to put my hand on the number. If I remember aright, the use of caustic soda was advised, but I do not know how strong a mixture to use nor how long to let it remain, so will you kindly let me know when the article in question appeared, or give me the information desired?

Morristown, N. J. B. MARSTON SMITH.

We do not recall the article you mention and have not found any specific reference to caustic soda in anything that has appeared on the subject of cleaning radiators within tht past few months. A ten to twenty per cent. solution could be employed, dissolving the soda in hot water, and it would not be apt to damage the metal by permitting it to remain several hours, or even over night. We should, however, recommend the use of what is known as a pickling solution as being much more convenient than soda. This is made of sulphuric acid, or what is usually known commercially as vitriol, the proportions being about the same, though a ten per cent. solution will doubtless be found strong enough for all purposes. Mix with cold water by pouring the acid into the water slowly, never the reverse. The two combine chemically and considerable heat is evolved; if the acid be poured into the water too fast there is danger of cracking the vessel, which should be glass or porcelain. Let the solution cool before using. The sulphuric acid immediately attacks the copper or brass of the radiator and will clean it in a comparatively short time. The best way to follow the progress of its action will be to draw some off from time to time, refilling with fresh solution. When it runs off clear the process is at an end. The radiator should then be flushed out very thoroughly so as to eliminate every trace of the acid.

More Light on the Ignition Proposition.

Editor THE AUTOMOBILE:

[603.]—With a multicylinder engine, is the current consumption in extra proportion to the number of cylinders—that is to say, does a four-cylinder engine use four times as much current as a one-cylinder engine, and does a six-cylinder engine use half as much again as a four-cylinder engine? It is assumed, of course, that the motors run at equal speeds. I cannot see any reason why the proportionate current consumption should not be as I have stated it, all factors other than the number of cylinders being equal, but several friends of mine who use multicylinder cars say that their observation does not indicate anything like a proportionate increase in the current consumption. JOHN HAGEN.

Brooklyn, N. Y.

It is perfectly obvious that the current required to produce sparks at four plugs in a given time must be four times as great as that required to produce a spark at one plug in the same time, the plugs being the same and all other factors being equal. Probably the explanation of the contrary opinion you have found lies in the fact that most multicylinder cars run with less gear changing than is required for single-cylinder cars, so that though there may be more current consumed during each revolution of the motor there are less revolutions of the motor to a given travel of the car. Take, for instance, the case of two cars climbing a grade. One, a car with a powerful multicylinder engine, will take the grade on the high gear, with the crankshaft revolving rather slowly. The other, weaker, with a single-cylinder engine, will have to drop to the lowest gear and climb with the motor turning over at such extreme speed that the single cylinder will require nearly as many ignition contacts per given time or distance as is required by all of the cylinders of the engine in the other car, during the same time or in going the same distance.

Distance Stanleys Ordered, But Not Delivered.

Editor THE AUTOMOBILE:

[604.]—I was glad to see in your issue of February 14 "How a Stanley Agent Feels About It." My back has been up for some time, and were I a Stanley agent I would have taken a fall out of someone long ago. Your paper, as well as the others, has never used the Stanleys fair in reporting the races entered by them. I and others believe this to be simply owing to the fact that they are not advertisers. In the races they have entered they have given odds, but never asked any; all their races have been won fairly, and always a light-powered car against a heavier one.

I had to smile to see Mr. Stanley at Mt. Washington two years ago in a fully equipped stock runabout—no freak—while the others were in overalls and grease and stripping their cars of every available ounce. He easily made the ascent in record time, taking Mrs. Stanley along with him, and she is no featherweight. I am proud to say I know the Stanleys well; their drivers, Marriott and Durbin, and their Ormond Beach racing rig. I would like to have someone tell me where the freak element comes in on this car, except in the shape of the windshield. The machinery is identical, except in size, to their regular output; the construction of engine, boiler and connections being the same. The shape of outside is odd but very practical, and Marriott probably owes his life to its light construction. Most reports of accident gave the impression that it was owing to a breakdown. As I understood it, a bad place in the course was to blame, Marriott took long chances at this particular spot, and none realized it as well as he did; but that was his job. It was a shame that while the laurel wreaths were flying around a year ago one of them did not hit him. The driver of the 200-horsepower foreign freak got it, but I am just Yankee enough to think it did not belong to him. They called him "Speed King," but he certainly sat in the second row.

They who think that Stanley cars are only fit for short dashes know very little of them; I see no reason why they should not enter even the Vanderbilt race with fair chance of winning. They would have to take water every fifty miles, but could easily spare the time—the advantage they would have getting away on the turns would more than make up for time lost in watering. There is no automobile made so easy on tires, and this would go a long way to help win. I hope to see one of these cars entered in a long distance race, and when it does I will wager there will be more come the cry-baby act than at Ormond. I am, of course, a Stanley owner, and most enthusiastic over my little rig that is always ready for a 500 to 1,000 mile run.

Portland, Me. HENRY R. STICKNEY.

For the 1906 American Elimination trial of the Vanderbilt Cup race, Charles J. Swain and John N. Wilkins, Jr., two well-known members of the Cape May Automobile Club, placed orders, after consultation with F. O. Stanley, for two steam racing cars. Subsequently Secretary J. Hiscock, of the Cape May Automobile Club, made a thorough explanation of the entire matter, and it appears on page 297 of the September 6, 1906, issue of THE AUTOMOBILE. If the Stanleys can construct a long-distance racer there is no reason why they would not receive a commensurate amount of publicity. Up to date it remains a fact that two such racers were ordered and not delivered, and it is an additional fact that the cars were actually constructed, and apparently found unsatisfactory, for Messrs. Swain and Wilkins saw fit to make public a signed statement in reference to the non-delivery.

Fording Streams with Carbureter Submerged.

[605.]—We have occasion in this part of the country where very few of the streams are crossed by bridges to make more or less frequent fords, and, in some cases, the water is quite deep. I would like to have you tell me how a stream can be forded when the carbureter is under water. R. W. EATON.

Watsonville, Cal.

We very much fear that this is a case in which the suggestion of the small boy is most apt to be in order. "Git out and push." It is evident that if the water level reach a point where the carbureter is submerged totally, it must perforce cease operations and the motor will in turn do likewise. If you know the bottom of the river to be safe at the point in question—*i. e.*, free from treacherous holes or rocks and the stream is not too wide—the expedient usually adopted in such cases may serve. That is, to rush the ford, trusting to the momentum gained while the engine continues to run to carry the car to the opposite bank. This is done quite frequently in the case of narrow streams.

REGARDING SALE OF RENAULTS IN AMERICA.

Editor THE AUTOMOBILE:

[606.]—Regarding the matter of Renault Freres representation in this country, I wish to make clear to the public through your valued publication that we, the Renault Freres Selling Branch, are the direct branch house of Renault Freres in this country and the only authorized agents. I will go further and state that no other concern can buy any Renault cars direct from the factory—all Renault cars in this country have to be purchased from the Renault Freres Selling Branch, or its authorized agents, which are as follows: Cryder & Co., New York City; Palais de l'Automobile, 1778 Broadway, New York City (who have a contract with us both for 1907 and 1908); C. P. MacNamara, New York City; J. L. Keir, 310 North Broad street, Philadelphia; Pardee & Canary, 1218 Michigan avenue, Chicago; Quinby & Co., Newark, N. J.

I have noticed in several papers that the C. A. Tileston Company advertise themselves as successors to Renault Freres Agency, trying to make the public believe that they are successors to ourselves. The positive facts are as follows:

Bernin and Tileston had a contract with Renault Freres, which expired September 30, 1906, and which was not renewed. Renault Freres, of Billancourt, France, decided to open their own branch house in New York, which is known as the Renault Freres Selling Branch. Owing to the fact that the firm of Tileston & Bernin could not make any contract with Renault Freres for 1907, Mr. Bernin severed his connection with Mr. Tileston, and is now with me as superintendent. Mr. Tileston has no right whatever to use the name of Renault Freres Agency, or call himself successor to Renault Freres Agency, as he is not. C. A. Tileston & Co. are successors to Bernin & Tileston and nothing more. Mr. Tileston has some cars left on his 1906 order, which, of course, he can sell, but he has no cars for 1907.

I would further state that all the cars delivered to Renault Freres Selling Branch bear our special plate, protecting them against any claim arising from the Selden patent. We are not licensees, and we defend all our customers against any prosecution from the Selden association. All purchasers of Renault cars should request their cars delivered with our special license plate in order to be sure of being protected in the event of any trouble arising from Selden patent.

I hope this letter will impress upon the public what the real facts are, and destroy any misunderstanding which may have occurred through misleading advertisements.

PAUL LACROIX, General Manager,
Renault Freres Selling Branch.

New York City.

THE EFFICIENCY OF FRICTION DRIVE.

Editor THE AUTOMOBILE:

[607.]—One of the most interesting questions at present before automobile engineers is the one relative to friction transmission. The accepted type of friction transmission seems to be that involving a flat-faced disk, which is traversed by a wheel rimmed with some frictional substance. So far as we have been able to find, this device does not occur in other field of power transmission, except in connection with very small powers, and the obvious reason for its rarity seems to be that it is a faulty element, both in theory and in practice.

It is obvious that all points in any radius drawn in the revolving disk are moving at different speeds. It is equally plain that the traversing wheel can only revolve at one speed at a time. It would seem, then, that this is the case: One line in the rim of the traversing wheel follows a line in the disk, all other points in the line of contact slipping to a greater or less degree. Small wonder that under such conditions the friction rim requires replacing after comparatively few miles of car-travel.

All data regarding friction-transmission which is at present accessible naturally deals with the rationally-designed spur and bevel-frictions, but a glance at this data serves to make more glaring the faults of the traversing-disk transmission. Some time ago a series of exhaustive tests were conducted at Purdue University to obtain facts relating to friction transmission. From the results of these tests we find that a friction-wheel (spur) 24-inch diameter by 2-inch face at a speed of 1,000 revolutions per minute will transmit 11.42 horsepower, when the pressure between the surface is 150 pounds per square inch, which pressure was found to be most efficient. Now, a representative designer of the traversing-wheel device transmits, or says he transmits, 24 horsepower through a wheel 20 inches diameter by 2 inches face at practically all speeds of his motor. As pointed out before, this device has only a single point of perfect contact, while the device from which the foregoing data was obtained brought into play a 2-inch line of contact. Wherein lies the discrepancy? The only possible means of increasing the capacity of the transmission would be to increase the pressure between the friction-surfaces. This, needless to say, wastes enormous power through friction and throws unnecessary strain upon all parts of the mechanism. In view of these facts, some brake-tests taken from the transverse shaft would prove interesting.

It might be well to say that the foregoing has been written entirely from the standpoint of a student of mechanical engineering and is in no way dictated by partiality to any particular car.

W. Lafayette, Ind. LOUIS RUTHENBURG.

MORE LIGHT ON CURRENT CONSUMPTION.

Editor THE AUTOMOBILE:

[608.]—I have been much interested in the discussion that has been running through your columns, concerning the amount of current consumed by the ignition systems of different engines, varying in accordance with the number of cylinders. One important point, though, I think has been missed by all of your correspondents, this having to do with the "surge" of current following immediately upon each contact. Each of these surges takes much more from the battery than does a single contact for a longer period, and therefore is a factor that cannot safely be left unconsidered. In fact, with many cylinders, and ordinary high-tension ignition with battery, I believe it can be shown that the current consumption is less when the vibrator is kept buzzing continuously and the current commutated only in the secondary. The Dock five-cylinder motor shown at the National Motorboat Show, at Madison Square Garden, New York City, during last week, had such an ignition system, and the makers claimed a very much lower current consumption than when a contact breaker was used in the primary. ERNEST KOBBE.

Mt. Vernon, N. Y.

THE ORIGIN OF THE WORD LIMOUSINE.

Editor THE AUTOMOBILE:

[609.]—With further reference to the query of Funk & Wagnalls as to the origin of the word limousine, it may be interesting to state further that the type of half-closed-in carriage body which now, in automobilia, bears the name, is a species very common in Bas-Limousin, now the Département du Corrèze of modern France. The Paris carriage builder who gave this name to his carrosseries may have been from the Limousin; probably was, but the limousine is a type of carriage body for a sort of diminutive stage coach—already in use for long years, perhaps centuries, in that particular part of mid-France which was formerly the Limousin. The French peasants' sabot, if it is an ample, full-bodied one and not a mere shuffleboard, is also a limousine, being of the same origin.

FRANCIS MILTOUN.

Jonquiers—Martigues B. du R., France.

NO AUTO FATALITIES IN VERMONT.

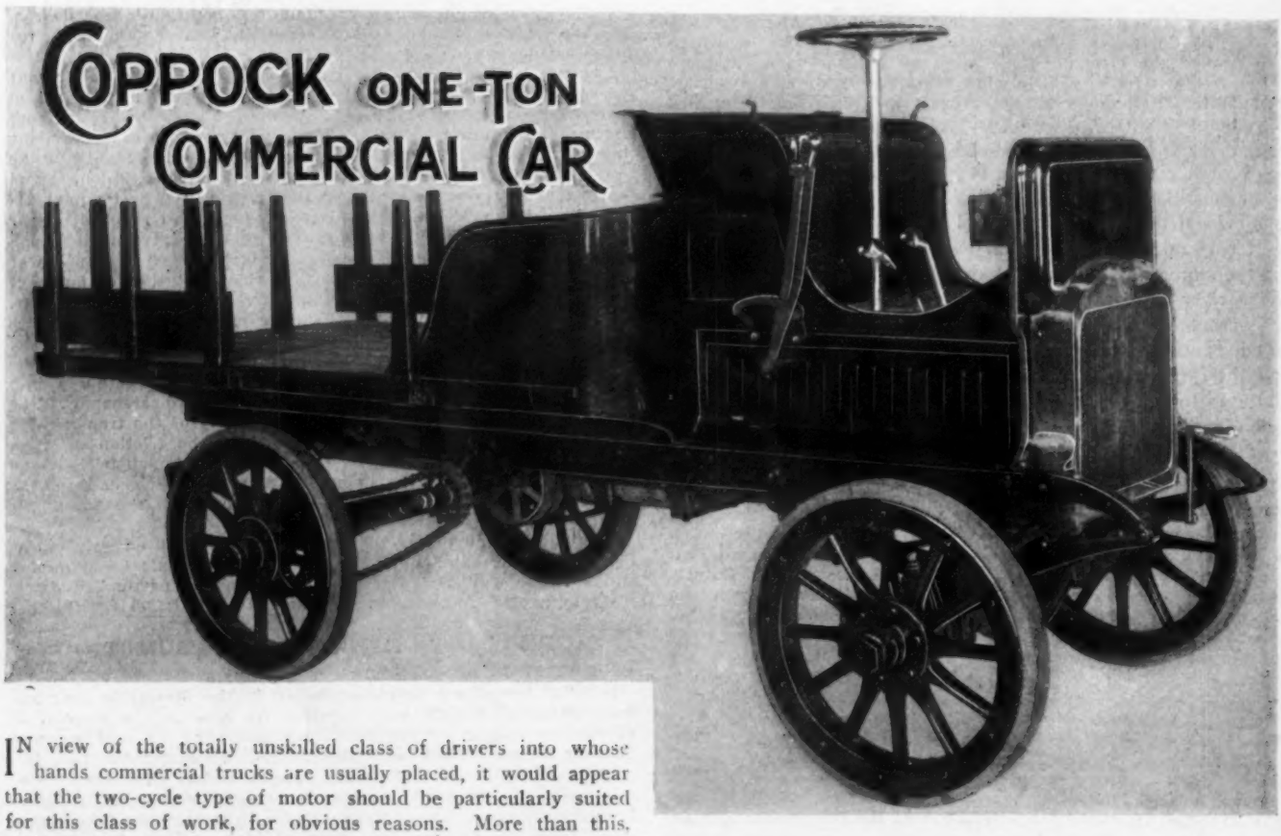
Editor THE AUTOMOBILE:

[610.]—On page 324 of "The Automobile" of February 14 is a paragraph on Vermont's low ratio of automobile accidents. The paragraph shows how fast an arrow will travel. The St. Albans "Messenger" spoke inadvertently of one death from automobiles, but did not say that the death was that of a Vermont woman while visiting in Springfield, Mass.

The truth is that there was not one killed in Vermont during 1906 by automobiles, directly or indirectly. I called the attention of the St. Albans "Messenger" to its editorial in which, I told them, the inference would be that somebody had been killed in Vermont by automobiles; they corrected the statement in a subsequent edition. JOHN W. GORDON.

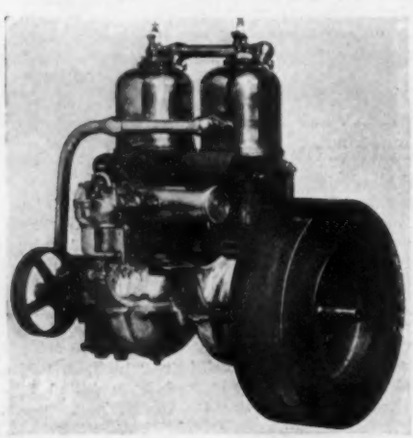
Barre, Vt.

COPPOCK ONE-TON COMMERCIAL CAR



IN view of the totally unskilled class of drivers into whose hands commercial trucks are usually placed, it would appear that the two-cycle type of motor should be particularly suited for this class of work, for obvious reasons. More than this, such vehicles are expected to run eight to ten hours a day and seven days a week with a comparatively small amount of time in which to overhaul them, so that it will be evident that nothing can be too simple to insure regularity of running coupled with endurance. The latest entrant into this field is the Coppock Motor Car Company of Marion, Ind., and in designing trucks for this purpose every effort has been bent toward preserving that utter simplicity of design and fewness of parts which tends toward the realization of a foolproof piece of mechanism—something that is of paramount importance, considering the purpose in view. For the present this firm is specializing on one and three-ton trucks, bodies being built to order.

Motor.—The power plant of the one-ton truck known as Model A consists of a two-cylinder, two-cycle motor of the three-port type, the cylinder dimensions being 4 1-2-inch bore by 5-inch stroke. They are cast without water jackets and the exterior of the cylinders round the jacket space is machined in order to insure a perfectly round cylinder at all points and to equalize expansion. A spun copper jacket weighing but 16 ounces complete is employed and is held in place by hexagonal bronze nuts top and bottom, permitting its ready removal and providing insurance against leaks at these points. The weight of the finished cylinder, minus its jacket, is 16 1-2 pounds, so that complete it only weighs 17 3-4 pounds. Its appearance without the jacket is clearly revealed by the illustration, showing cylinders ready for assembling



TWO-CYCLE POWER PLANT COMPLETE.

The cylinders are finished by a special reamer, the pistons and rings being ground to size. The last named are the Cartwright type of steam packing rings, the outer ring being 5-8 inch wide by 1-8 inch thick and split at 45 degrees. This is the master ring and under it are two eccentric rings measuring 3-16 by 1-8 inch. All the rings are held by a single pin passing through the lap of the master ring and between the two eccentric rings, an allowance of 1-16 inch in depth of the ring groove over the height of the two rings being made to facilitate lubrication. Exhaustive tests have shown this method of arranging the rings to be proof against carbon deposits working under them, which is said to be a more or less common fault with the two-cycle engine. The crankcase is of a special aluminum alloy, the lower half being made in two pieces flanged together at the center to permit of adjustments being made on either rod without the shaft dropping out during the operation. The crankshaft bearings are babbitt and bronze, the outer bronze shell having 24 studs cast on it, extending through the babbitt lining. The babbitt metal is forced into these shells under heavy hydraulic pressure and afterward machined to size in order to produce the best possible wearing surface. Three 4-inch bearings support the shaft. The latter is a hand forging of 30-point carbon steel and is finished all over, the journals being ground to size. The big end bearings of the connecting rods are split in the usual manner but are overlapped as in steam practice. Each half is held by a 3-16-inch dowel to prevent the box from rotating. These holes are drilled with special jigs so as to insure perfect fitting of renewals, which is an important consideration.

Motor Accessories.—The carbureter is of the standard float-feed, automatic compensating type. One set of hardened nickel-steel spiral gears working at a 45° angle, serves to drive both the water-circulating pump and the timer, the timer shaft being mounted on three ball bearings, due provision having been made for adjustment in case of wear. The driving gears are encased in a bronze housing at the front of the motor and work in grease. The pump is of the standard gear type, having 3-4 inch inlet and outlet. The remainder of the cooling system comprises a vertical

fin tubular radiator placed forward under the footboard and having 176 lineal feet of tubing. It is supplemented by a four-bladed fan belt driven directly from the crankshaft, provision being made for maintaining the belt tension by means of an adjustable vertical support. The fan itself is mounted on ball bearings carrying sufficient oil for a year's service without replenishing supplies.

FINISHED PISTON AND RINGS.

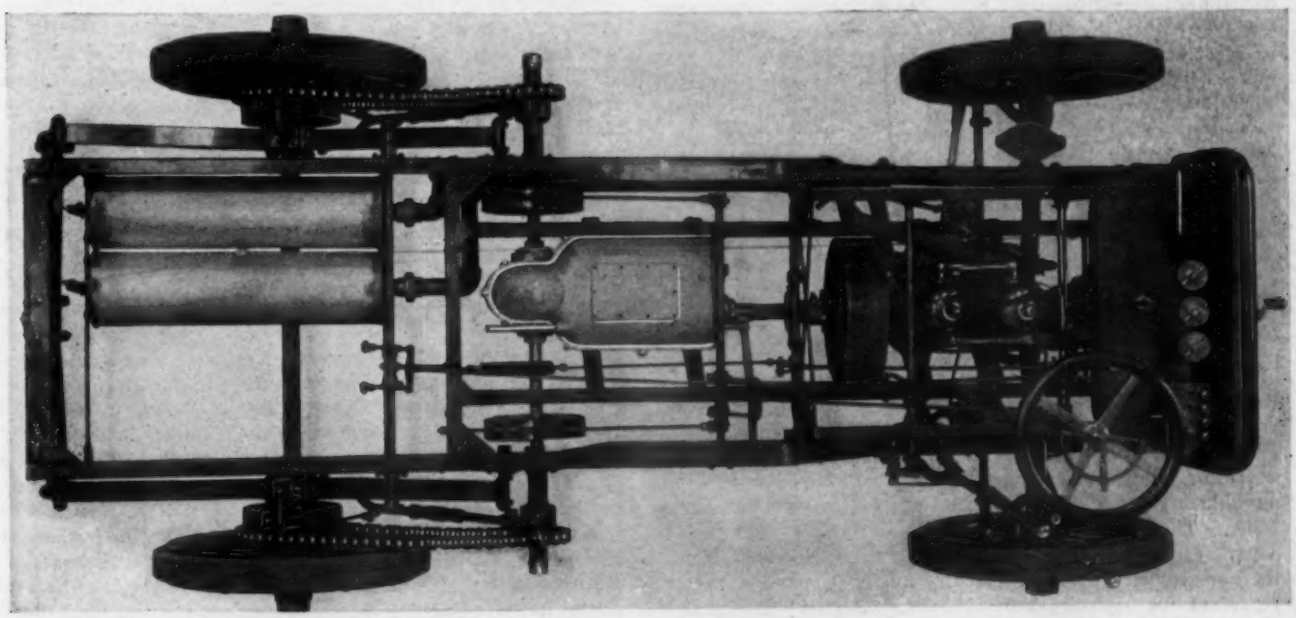
Lubrication. — A gear-driven, force-feed oiler provides a positive means of lubricating the piston and connecting rods. One oil lead terminates at a boss on the outside of the cylinder communicating with a groove 3-16 inch wide by 1-8 inch deep inside the cylinder. This groove extends around from one side of the piston pin to the other, thus entirely surrounding the piston with the exception of the space occupied by the pin, which is 1 1-8 inches in diameter. This groove is never uncovered by the travel of the piston, the latter coming within 1-8 inch of it at top and bottom. For the lubrication of the big end bearings the piston pin is hollow two-thirds of its length. A second oil lead registers with this hollow end. The wrist pin is drilled so that when the crank is in a vertical position oil is fed to the end of the rod, and when in a horizontal position the hole in the pin registers with a tube running down the channel of the rod to the big end. This system has been designed to run with a minimum amount of oil and no waste, and to test its efficiency the crankcase of a car that had been in service steadily for two months was removed and found to contain hardly an ounce of oil in the bottom of either of the compartments.

Grease is used to lubricate the crank journals and is fed from cups placed on the dash, the leads consisting of 3-8-inch 18-gauge copper tubing. Placing these cups away from the heat of the engine prevents the grease from melting and also keeps them under the eye of the driver at all times.

Transmission.—The clutch is of the internal expanding type, consisting of a bronze shoe 10 inches in diameter and having a 2 1-4-inch face, 8 per cent. of which consists of cork inserts. The two parts of the shoe are hinged and expanded by means of a flat cam; they are supported by a cast steel web, the drive being taken from this point to the square shaft of the transmission. The latter is of the progressive type providing three speeds forward and reverse, the pinions all being of hardened nickel steel with a 1-inch face of 6 pitch. The bevel pinions are also of the same material but of 4 pitch. All shafts run on Timken roller bearings of large size. The cross countershaft is squared where it passes through the differential case to permit of easy removal. The outer ends of this shaft run on American roller bearings. Final drive is by means of generously proportioned double side chains.

CYLINDER AND JACKET SHOWING LOWER RETAINER.

Running Gear. — The frame is of cold-pressed nickel steel, supported on semi-elliptic springs front and rear, the former measuring 2 by 40 inches and the rear 2 1-4 by 48, both having eight leaves. These are supplemented by a cross spring at the rear measuring 38 inches in length and also having eight leaves. The front axle is a 1 3-4-inch drop forging of I-beam section, while the rear is a 1 3-4 piece of square section. The wheels are 32 inches in diameter and run on Timken roller bearings. They are shod with 3 1-2-inch solid Diamond tires front and 4-inch rear. Brakes are carried on the cross countershaft, one being placed on either side of the differential, in addition to which there is a set placed in drums on the driving wheels, the latter being of the contracting type, cast steel shoes bearing on a steel drum 10 inches in diameter by 2 1-2-inch face. As is customary in touring car practice, the former set or countershaft brakes are operated by a pedal and used for running while the hub brakes are operated by side lever and constitute the emergency.



HOW THE CHASSIS OF THE COPPOCK COMMERCIAL CAR LOOKS FROM ABOVE, WITH BODY DISMOUNTED.

AUTO CLUB NEWS FROM ALL SECTIONS

Windy City Autoists Prepare for a Season of Activity.

CHICAGO, Feb. 24.—The directors of the Chicago Motor Club have accepted the resignation of President William H. Arthur and named F. C. Donald to succeed him, choosing David Beecroft to fill Mr. Donald's place on the directory. It has been decided to arrange for a reliability contest, a hill climb, an economy test and a braking and skidding contest. The first three events were held last summer by the Chicago Automobile Trade Association, but the Chicago Motor Club believes that the dealers will be pleased to turn over these affairs. The braking and skidding tests are a new venture and it is believed will provide a novel and interesting competition. To handle these events a committee has been formed consisting of Charles P. Root, chairman; Joseph F. Gunther and Walter L. Githens.

Rules for the economy test have already been outlined, though the event will probably not take place until next August. There will be an eliminating competition over a 100-mile course and three cars will qualify for the finals against the Silent Knight machine, instead of one as first proposed. This means that four high-powered machines will be in competition for the trophy which the Chicago Motor Club will purchase with the $500 check put up by Charles Y. Knight when he challenged any car in the country to an economy test. The test will be over a 100-mile course and the final over a 300-miles route, the last part taking three days to decide. Touring machines only are eligible; they must weigh about ten and a half pounds to the cubic inch of piston displacement and must carry a stipulated load of dead weight. No limit will be placed on the size of the machines, competitors are free to make any carbureter adjustments they desire, curtains may be placed over the radiator and fans disconnected, but no additional water supply can be obtained. A standard body and tires must be used as well as a standard gasoline tank; the placing of a tank on the dash will not be allowed.

Considerable activity is being shown in the Chicago district on the signboard movement. Joseph F. Gunther, chairman of the runs and tours committee of the Chicago Automobile Club, is trying to secure the co-operation of the Chicago Motor Club and the Chicago Automobile Trade Association with his own club to give to the district a complete series of signboards.

Chicago automobilists are only partially satisfied at the recommendation of the American Automobile Association to start the Glidden tour from their city. Formal action in the matter was taken when the Chicago Motor Club appointed a committee to work for the terminating of the tour at Chicago. The committee favors a start in New York City and a westerly run by what is known as the national route leading through Syracuse, Rochester, Buffalo, Cleveland, Toledo, and South Bend. It is expected that the two other auto associations, the Automobile Club and the Automobile Trade Association, will form similar committees and that the three will work together for the common end.

Edw. Kneeland Elected President Pittsburg Club.

PITTSBURG, PA., Feb. 25.—At the annual election of the Automobile Club of Pittsburg, held February 18, the following board of officers were elected for the ensuing year: President, Edward Kneeland; first vice-president, George E. Painter; second vice-prsident, W. N. Murray; third vice-president, Frederick Byers; secretary, Paul C. Wolff; treasurer, George G. Glass; board of governors, one year, William P. Baum; two years, Jno. C. Bragdon; three years, Philip S. Flinn, Dr. John A. Hawkins, C. M. Miller. The attendance and interest shown were greater than at any time in the club's history. The treasurer's report showed the organization to be in excellent condition financially, and the report of the secretary showed an increased membership list.

Jersey Autoists Eat Their Annual Dinner at Newark.

NEWARK, N. J., Feb. 25.—The third annual dinner of the New Jersey Automobile and Motor Club, which has now a membership of 800, took place at Achtel Setter's Wednesday evening of last week. Autoists from all sections of the State were present, and among the guests were State Commissioner of Motor Vehicles J. B. R. Smith, of Trenton, and Winthrop E. Scarritt, of East Orange, ex-president of the A. A. A. A number of plans were discussed informally, covering all fields of automobiling, sporting, legislative, touring and the holding of various tests of public utility. Mr. Scarritt, who was the principal speaker, said that New Jersey had more miles of macadam road than any other State and of the 4,000 miles in the United States this State boasts of 1,100 miles. Soon the greatest friend of the automobile would be the New Jersey farmer, because the good roads that are being constructed will increase the price of every farm. Considerable interest was displayed in the plans for the five or six-day endurance run that the club has decided to hold early in the spring, probably late in April or early in May. It is proposed to map out a 500 or 600-mile tour, probably into Pennsylvania, with rules framed somewhat on the lines of the Glidden Cup tour regulations. They will be stringent enough to provide that the cars must not only cover the prescribed distance without making repairs, but also within a stated time. H. A. Bonnell, secretary of the club and chairman of the contests committee, expects to announce the route and conditions very shortly.

R. I. Automobile Club Names Its Standing Committees.

PROVIDENCE, Feb. 25.—Standing committees for the current year were appointed at the recent meeting of the board of directors of the Rhode Island Automobile Club. With the election of the new house committee, the entertainment committee passed out of existence, the functions of both committees being combined in the house committee, of which Dr. Church retains the chairmanship. On the runs, tours and contests committee Eugene M. Sawin takes the place of R. Lincoln Lippitt.

In addition to selecting the make-up of the committees, the directors named its representatives on two of the boards of the American Automobile Association. Four new names were also added to the membership rolls. The personnel of the chairmen of the committees is as follows: Membership, Charles O. Read; house, Dr. Wm. P. Church; runs, tours and contests, Elliot Flint; laws and ordinances, Dr. Julian A. Chace; auditing, B. J. Horton.

Elliot Flint was chosen to represent the club on the touring committee of the A. A. A. and J. Jerome Hahn was reappointed as the Rhode Island representative on the law committee of the National Association.

Complete Harmony in Missouri on Legislative Matters.

ST. LOUIS, Feb. 23.—Roy F. Britton, secretary of the Automobile Club of St. Louis, has taken exception to the statements published in THE AUTOMOBILE of February 14 relative to automobile legislation in the Missouri General Assembly. Complete harmony, declares Mr. Britton, prevails between the St. Louis and Kansas City clubs. The two bodies have always worked in unison, and up to the present time there has been no disagreement between them and only the best of feeling prevails. No automobile was used at Jefferson City to make demonstrations to members of the Legislature. The Botsford bill referred to is a bill introduced by Mr. Botsford at the request of the Automobile Club of St. Louis. The St. Louis and the Kansas City clubs had each a representative at Jefferson City to further the interests of the bill, but they are working in perfect accord.

In connection with the St. Louis automobile show, to be held in the Jai Alai Building from April 1 to 6, an automobile floral

parade will be held on the morning of Monday, April 1. It is expected that at least 150 machines will take part in the parade, which will go over the downtown streets. Ten silver cups will be awarded to the best decorated machines. Dave Strauss, promoter of the show, states that while in Chicago he made arrangements to have the moving pictures of the Vanderbilt Cup exhibited at the St. Louis automobile show.

The members of the St. Louis Automobile Club have approved of the plan to establish a chauffeurs' information bureau. Club members have pledged themselves to employ only drivers who possess certificates issued by the club secretary. Drivers will be required to file an application stating their occupations during the last five years, give references to their character and their ability to operate machines. If the secretary is satisfied with the information the applicant will receive a certificate, which will entitle him to consideration for employment by club members. By this plan it is hoped to materially reduce the number of irresponsible drivers.

Ohio Valley Autoists Elect Officers.

WHEELING, W. VA., Feb. 23.—At a recent largely-attended meeting of the Ohio Valley Automobile Club, held in this city, a constitution and by-laws, prepared by Attorney F. A. Chapman, of Wellsburg, were adopted and the annual election of officers was held, resulting as follows: President, M. F. Giesey, of Wheeling; vice-president, F. A. Chapman, of Wellsburg; S. Ott Laughlin and A. W. Paull, of Wheeling, and S. W. Meals, of Moundsville; secretary, T. A. Westmeyer, of Wheeling; treasurer, A. A. Wheat, of Wheeling. A board of directors consisting of six members was also elected.

It has been decided by the club to place danger signs along the roads wherever they are needed. An amendment to the bill now before the legislature limiting the speed of automobiles to four miles an hour is now being prepared and will propose a six miles limit. Several other changes are also asked for, some reducing the existing penalties and others asking for an increase, it being the opinion of the club that the present penalties err in some cases by leniency and in others are unnecessarily severe. The club has a membership of forty owners of automobiles.

Denver Autoists to Build a $10,000 Clubhouse.

DENVER, COL., Feb. 22.—Ten thousand dollars will be invested in the new clubhouse of the Colorado Automobile Club, the preliminary plans for the erection of same having been submitted to and approved by the members at the recent annual meeting of the club. Probably there was never a more successful club, considering the length of time since its founding and the difficulties to be contended with, than the combination of good citizens which bears the name of this grand State and automobile club as the other two-thirds. A good roads movement has been so ably pushed that indications are that within a short space of time tourists from all over the world will flock to Colorado with their cars to enjoy this unsurpassed climate, scenery and the coming unsurpassed highways.

The annual election resulted as follows: President, Dr. F. L. Bartlett; vice-president, J. W. O'Connor; secretary, Dr. W. H. Bergtold; treasurer, Louis Searing; two additional members of the executive committee, F. O. Stanley, J. H. Carson. James H. Pershing, a prominent member of the Denver bar, delivered an entertaining lecture on "The Law of the Road."

Wisconsin to Form a State A. A. A. Association.

MILWAUKEE, Feb. 25.—Wisconsin automobilists can now become affiliated with the American Automobile Association through a State organization. At the recent meeting of the Milwaukee Automobile Club it was decided to organize a State division of the A. A. A. in Wisconsin, and Secretary Drought will apply for admission into the national body at once.

James Drought was recently elected a director of the A. A. A., and it was chiefly through his missionary work that Wisconsin was brought into the fold.

THE AUTOMOBILE CALENDAR.

AMERICAN.

Shows.

March 2-9.....—Minneapolis, Automobile Show, First Regiment Armory, Minneapolis Automobile Dealers' Ass'n.
March 2-9.....—Chicago, Second Annual Power Boat Show, Seventh Regiment Armory. W. C. Andrews, manager, 19 E. Huron St.
March 4-10.....—Kansas City, Mo., First Annual Automobile Show, Convention Hall. Frank L. Woodward, manager, Willis Wood Theater Building.
March 9-16.....—Boston Automobile and Power Boat Show, Mechanics' Hall and Horticultural Hall, Boston Automobile Dealers' Association. C. I. Campbell, mgr.
March 13-16....—Omaha, Auditorium, Second Annual Automobile Show, Omaha Dealers' Association. T. Gilman, manager.
March 18-23....—Providence (R. I.) Automobile and Power Boat Show, Infantry Hall. F. M. Prescott, manager.
April 1-6.....—St. Louis, Mo., Automobile Show, Jai Alai Building, St. Louis Automobile Dealers' Association.
April 6-13.....—Montreal, Canada, Second International Automobile and sportsman's Exhibition. R. M. Jaffray, manager, 309 W. Notre Dame Street.
April 8-13.....—Pittsburg, Pa., First Annual Show of the Pittsburg Automobile Dealers' Association, Duquesne Garden.

Races, Hill-Climbs, etc.

April 8-9.....—Harrisburg, Pa., Two-day Endurance Run, Automobile Club of Harrisburg.
May 30.....—Philadelphia, Hill Climb, Quaker City Motor Club.
Oct. 19.....—St. Louis, Mo., International Aerial Race for the Gordon Bennett Prize. Aero Club of America.

Motor Boat Races.

June 8.....—670-Mile Ocean Motor Boat Race, New York to Bermuda. Motor Boat Club of America and Royal Bermuda Yacht Club.
July 20.....—New York to Marblehead, Mass., 270-mile Motor Boat Race. New Rochelle Yacht Club.
Sept. 2-6.....—Jamestown (Va.) Exposition, Motor Boat Races.

FOREIGN.

Shows.

March 7-16.....—London, Olympia Commercial Vehicle and Motor Boat Show.
March 15-23....—Edinburgh, Scottish Cycle and Motor Show.
April 6-13.....—London, Agricultural Hall Motor Show.
May 4-15.....—Madrid, Spain, Automobile Exhibition, Palace of Fine Arts, Royal Automobile Club of Madrid.
May 15-26.....—Zurich, Third Annual Swiss Automobile Show.

Race Meets, Hill Climbs, etc.

March 20-27....—Nice (France) Automobile Week.
April 1-16.....—Spring Wheel Competition, A. C. of France.
April 2-15.....—Monaco Motor Boat Exhibition and Races.
April 21.....—Targa Florio Tour (Sicily), Auto Club of Milan.
April 25-28.....—Touring Contest, Automobile Club of Touraine.
April 28.....—Chateau Thierry Hill Climb.
May 24-27.....—Voiturette Contest, Automobile Club of Austria.
May 29-June 1..—Irish Automobile Club Reliability Trials.
June 3-12.....—Herkomer Cup, Automobile Club of Bavaria.
June 14.....—German Emperor's Cup, Taunus Circuit, Imperial Automobile Club.
June 20-22.....—American Gold Cup, Start from New York of European Tour for American cars. Georges Dupuy, secretary, 1402 Broadway, New York City.
June 14-29.....—Scottish Reliability Trial, Scottish Automobile Club.
July 2.....—Grand Prix, Automobile Club of France.
July 14, 1908....—Paris to London, Aerial Race.
July 15-18.....—Ostend Week, Record Trials, Automobile Club of Belgium.
July 21.....—Ardennes Circuit (Belgium).
July 31.....—Liedekerke Cup for Touring Cars, Ardennes Circuit, Belgium.
July 31-Aug. 8.—Belgium Regularity Contest for Touring Cars. A. C. of Belgium.
August 1-7.....—Criterium of France, 1,750 Miles Touring Competition and 250-mile race for the Press Cup. (Exact dates to be fixed.) A. C. of France.
Sept. 1.....—Italy, Brescia Circuit, Florio Cup. A. C. of Italy.

THE AUTOMOBILE

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"	This Issue,	17,500
"	Since January 1,	154,400

European Autoists Have a Mixed Program. In less than two months Europe will have opened its annual competitive campaign, and the small army of professional drivers will once more be plunged into the strenuous life. The slack period is only of short duration, for the return home from the autumnal Vanderbilt contest is followed by a few minor competitions, and it is not until the end of the year that the racing and demonstration machine is allowed to take its ease. April 21 Italy will set the ball a-rolling with its Targa Florio, driven by officialism to the island of Sicily. Germany enters the arena shortly after with its Herkomer Cup contest for amateur drivers, and its Kaiser Cup race with ninety-two professional drivers. July will be ushered in by the French Grand Prix in Normandy, with the Sporting Commission Cup as a feeble prelude. Attempts will be made to lower world's records at Ostend during the middle of the month, and towards its end Belgium will organize its Ardennes Circuit for racers and Liedekerke Cup for fast tourists. The first week in August will see the familiar crowd of auto enthusiasts in the neighborhood of Trouville for the tourist competition and race that the Marquis de Dion has at last persuaded his club to undertake. Britishers will betake themselves to the Isle of Man towards the close of the summer to glory in the tourist race which the cast iron laws of the Empire forbid on the mainland. Brescia, in Northern Italy, will be the scene of a big September race. Minor contests will fill in the gaps between these big events and carry the season along until the muggy weather of November puts a cloud over all.

The outstanding feature of the European program is its diversity. There is intense activity but no unanimity as to the most profitable type of contest. France has abolished the old weight limit and imposed a fuel allowance of such latitude that there is no fear of a diminution in the speed of her flyers. Italy and Germany have something in common in that both have imposed a limited cylinder area; Belgium remains true to old conditions, and Great Britain has its fuel allowance hedged around with numerous restrictions.

This condition of affairs is not altogether advantageous. Each nation is proud of its own formula and jealous of the success of rival events. The manufacturer has his difficulties, for under the new conditions he is unable to participate in as many events as formerly, owing to the diversity of regulations and the impossibility of building a special machine for each race. That the year will be a profitable one cannot be doubted, but it will prove the necessity of more uniformity of action.

✷

The Two-Cycle Motor for Commercial Use. There appears to be every reason to believe that the two-cycle motor will find its first great development in the field of the gasoline-driven commercial vehicle rather than in the pleasure type. For unvarying reliability, coupled with great endurance, no mechanism that is to be trusted to the tender mercies of an unskilled driver can be made too simple. What appears to the mechanically versed to be the very acme of simplicity, not infrequently puzzles the uninitiated unduly, its very lack of apparent complication lending it an air of mystery. Be this as it may it is obvious that the two-cycle type of motor, with its lack of small moving parts, offers a very high factor of safety against breakdown in the hands of drivers whose knowledge is so limited that they are apt to overlook such a thing as the need of lubrication.

The power plants of such vehicles must, not alone, be as nearly fool proof as it is possible to contrive them, but they must also be as nearly automatic as it is possible to make such a piece of machinery. The two-cycle motor lends itself to these requirements admirably. In the three-port type, which appears to represent the most advanced form in use to-day, there should be no need whatever for the driver to pay attention to anything other than the regularity of the lubrication and the needs of driving during the course of a day's work of ten or twelve hours. Moreover, the absence of small parts removes the temptation to fuss and fiddle in the attempt to find, what is more frequently than not, a wholely imaginary wrong. By giving such trucks a reasonable amount of attention night and morning, by one versed in their mechanism, it should be possible to keep them running through an entire season's work without serious repairs. In other words, without any necessity for being in the shop any oftener than the ordinary dray or its four-footed power is.

✷

All-the-Year Autoing Now Holds General Sway. Nothing has accentuated the fact that there is no longer a closely defined automobile season so strongly as the easily demonstrated superiority of this form of transportation during the extended periods of inclement weather that have marked the present winter. The transition from the time when it was considered a worse than profitless undertaking, by all but the few who gloried in a strenuous pastime, to keep a car out of storage once the ground was covered with snow, to the present, when it is an exceptional case in which a car is put away at all, has been very rapid. The closed body has brought comfort with it, but only the vastly improved reliability of the machine as a whole has made its continued use under such conditions a possibility.

There is still a closed and open season, however, though the line of demarcation is no longer well-defined. While the majority of autoists now keep their cars in commission the year round, it is principally for city use or short trips when the weather favors. Touring is still a summer pastime, and balmy weather marks the coming of the open season.

AMERICAN DRIVERS FOR AMERICAN CARS.

Albert L. Pope, first vice-president of the Pope Manufacturing Company, commenting on the next Vanderbilt Cup race, expresses the following views:

"The subject of another Vanderbilt Cup race is of widespread interest, not only throughout the United States, but across the Atlantic. A good many inquiries are being made concerning the details of this event, and I have on many occasions expressed myself to the effect that we expect to enter several cars for that race. We feel that it is not an essential feature to fix a maximum limit of horsepower in the contesting machine, although we do believe in the present French system of fixing an outside limit of weight.

"The season of the year has been more or less discussed, but we are inclined to the opinion that October furnishes the best environment and weather conditions to run this contest, and we know of no better place in America than the new automobile highway on Long Island, provided that is completed in season. Otherwise, any course similar to the one already used on Long Island, which would cover a distance of approximately 300 miles, seems most advisable. Long Island is particularly well located, and its topography well suited to the general conditions required in a fair automobile contest of this kind.

"We are strong believers in the policy of having American machines driven by American-born citizens, and we would like to see the next Vanderbilt Cup race run under approximately these conditions, with the addition of such other details in arrangements as are found necessary to the proper regulation and safe-guarding of the contest."

THOMPSON SAYS PARKWAY WILL BE READY.

"Enough of the Long Island Motor Parkway sufficient for the holding of the Vanderbilt Cup race will be completed beyond any possible doubt," said Chairman Jefferson DeMont Thompson, of the A. A. A. Racing Board, when asked the other day, probably for the thousandth or more time. Duncan Curry, of the New York *American*, was the questioner, and according to what Chairman Thompson told him, the race may take place in the vicinity of Riverhead, which will be at the east end of the parkway. Since the international balloon race of the Aero Club of America will take place at St. Louis, October 19, it appears probable that October 12 will be the date of the Vanderbilt race, the American Elimination trial being held a fortnight previous. Mr. Thompson is treasurer of the parkway, in addition to being chairman of both the Racing Board and the Vanderbilt Cup Commission. Therefore, he should know what he is talking about.

MARRIOTT ACTS AS A STARTER AT ORMOND.

ORMOND, FLA., Feb. 22.—At some impromptu automobile races held to-day at the Ormond end of the beach, Fred Marriott, who nearly lost his life at the recent meet, acted as starter, and has apparently thoroughly recovered from his frightful experience met with in the wrecking of the Stanley "Teakettle." To-day's winners included C. W. Seamans, of Brooklyn, two-mile event; W. A. Adriance, of Poughkeepsie, potato race, and R. H. Kimble, of Omaha, obstacle and novelty races; J. H. McCarthy, of Boston, figured as the winning owner in the motor boat race, in which there were seventeen participants.

FRANCE AFRAID OF THE INVADER?

A cablegram from Paris to the *Sun* announces that *Les Sports*, one of the leading French daily automobile journals, violently attacks the proposed tour of American automobiles through France as dangerous to the French industry, and demands that it be prohibited. *La Presse*, a leading evening journal, concurs in this demand. Both papers maintain that if American manufacturers want to advertise the capabilities of their cars they should enter the French tests or allow French cars to participate in the tour.

CHRISTIE'S GRAND PRIX ANNOUNCEMENT.

Walter Christie, the solitary American entrant for the Grand Prix, last week gave an informal dinner at Martin's, New York City, which function was utilized by Mr. Christie in informing the metropolitan press representatives of his intention to compete in the big French race. Besides the press men, the guest list included Alfred Reeves, Sumner Healey, ex-Senator Barcus of Indiana, S. M. Butler, J. B. Lozier, Samuel Bogart, A. Carter, Georges Dupuy, and Harry Treadwell. Louis Strang, who will serve as mechanic, as in the past, on the Christie craft, was also present. The newspaper men told Mr. Christie that he had supplied them with more or less sensational news in the past, and they hoped that the foreign chapter which he was to contribute would be equally interesting. The indefatigable American intends to locate on the French course several weeks before the race and become thoroughly familiar with every kilometer. The Christie racer is very nearly completed, and will be ready for trying out in less than a month.

NEW JERSEY'S REVENUE FOR ONE YEAR.

TRENTON, N. J., Feb. 25.—Commissioner J. B. R. Smith, of the Department of Motor Vehicles, estimates that the automobile receipts for the fiscal year ending May 1 will be about $80,000, which money will be expended in repairing the improved roads of the State, providing the legislature legalizes this expenditure.

Up to January 1 the department registered 13,759 vehicles and issued 15,269 licenses to drivers. At that date the amount of fees collected was $62,233.91. The receipts of the department in January for registration and licensing amounted to $1,193.17, and at the close of business last Saturday the receipts from these sources were $506, making the total receipts from May 1, $63,933.08.

Up to January 1 there had been collected $991 in fines. In January the fines collected amounted to $111 and in February $470, making the total receipts from this source $1,572.50. The aggregate receipts of the department to date are $65,505.58.

"DIPLOMAED" CHAUFFEURS INELIGIBLE.

As in every other walk of life, the man who has gained his knowledge of automobiles entirely in the hard school of experience looks down contemptuously upon the would-be chauffeur and his "book-learning." To judge from the statements of some of the speakers at the preliminary meeting of graduates of the New York West Side Y. M. C. A. to form a club, the contempt takes the form of positive enmity. "College graduates" need not apply, seems to be the feeling, and the advice to say nothing about being such was freely handed round. After much discussion, it was finally decided to call the new organization the Motor Club of the West Side Y. M. C. A., though the last part of the name occasioned much trouble, and it was seriously proposed to omit it owing to the prejudice referred to. The lengthy appellation was finally adopted, however.

MORA CAR MAKES INTER-CITY RECORD.

One of the cars exhibited by the Mora Motor Car Company, of Rochester, was run to the Buffalo show under its own power in the record time of 2 h. 30 min. Mr. Mora made this statement in the course of a conversation, and A. Vernon Hart, a Rochester dealer who has had experience over the roads in question, immediately laid a wager that it could not be done in such a time under prevailing conditions. The wager was accepted. Driven by W. M. Birdsall, its designer, the car left Buffalo at 8 A.M. Sunday, reaching Batavia at 9:07, where Ray Hollis took the wheel. The entire drive was in the face of a blizzard, but the car arrived at Rochester at 10:13:45, having done the distance in 2 h. 13 min.. 15 sec., or with 16 minutes and 15 seconds to spare. Robert Thompson and William Likly acted as referees and timed the arrival of the car at the Rochester end.

EMPEROR'S CUP HAS 92 ENTRIES.

BERLIN, Feb. 15.—Five European countries will this year organize five important speed contests, all on different lines. England has its Tourist Trophy, a speed test for touring machines with a limited fuel supply and a weight limit; France has its Grand Prix, a racing event pure and simple, with a limited but generous fuel supply; Italy holds to its Targa Florio, with a limited cylinder area; Belgium has its fast Ardennes circuit, in which racers must submit to the old weight limit, and Germany has its Emperor's Cup, nominally for touring machines, but in reality for racers with a limited cylinder volume.

OFFICIAL COURSE FOR EMPEROR'S CUP.

The main regulations of the Germant event, which will be held June 14, are cylinder volume limited to 10.56 pints; minimum wheelbase, 118 inches; minimum height of seats, 93.4 inches; minimum weight, 2,585 pounds; road clearance, 6 inches. Ninety-two entries have been received for the race, the number being the largest on record for any speed contest. The nations represented are: Germany and Austria, 33; France, 23; Italy, 20; Belgium, 10; England, 4; Swiss, 2. Owing to the large number of contestants, some difficulty has been experienced in finding a suitable circuit, and for a time it was thought that the number of cars per firm would have to be reduced from three to two. This has been avoided by lengthening the course to seventy-five miles without any controls or neutralizations. Even with this length of course the leading cars will be round to the starting point before the last starters have begun their run, but special precautions will be taken to prevent accidents from this cause.

As will be seen from the accompanying map, just issued by the Automobile Club of Germany, the course is a modification of the Taunus circuit, on which the 1904 Gordon Bennett race was run. On that occasion the course was taken left-handed; this year the German race will be run right-handed. The headquarters of the circuit will probably be Kloster-Thron, a few miles to the north of Saalburg, where the Gordon Bennett headquarters were fixed. From this point the arrival of the racers can be seen for a considerable distance; they will descend the hill towards Werheim and climb up the short hill leading to the grandstands.

It is expected that the Emperor will be present in person at the race, and every effort will be made to make the grandstand worthy of their royal occupant. The Imperial pavilion will occupy a central position with a grandstand on each side, the whole placed obliquely so as to obtain a good view of the machines from the time they begin to descend the Werheim hill. Seventy thousand dollars have been received in entrance fees, and the club officials declare that they will not spare the funds to obtain a perfect course and elegant stands. The weighing-in ground will probably be at the west side of the course, a considerable distance from the start. A special loop has been built on the course to allow of turning after the race.

GRAND PRIX DATE IS JULY 2.

PARIS, Feb. 18.—Although no official announcement has yet been made, we are able to state that the Grand Prix of the Automobile Club of France will be held on the Dieppe course on Tuesday, July 2. In fixing a date account has to be taken of the local markets, for although the Norman population is enthusiastic over the auto race, and would make no objection to the pulling down of a bridge or the stoppage of the entire railroad service, the disarrangement of the little country markets would not be tolerated. As Tuesday is the only day on which no market is held in the towns on the course, it will certainly be the day chosen for the race. A formal assurance has been given by the prefect, the local deputy, and other officials that a subvention of $20,000 will be handed over to the Automobile Club of France and that certain road improvements will be carried out and the telegraph service reorganized at Government cost.

It has been practically decided to erect the grandstands at Pollet, four miles from Dieppe, facing the sea, and on the side of the triangular course running parallel with the English Channel. This is conceded to be the most suitable spot and will be accepted if satisfactory terms can be made with the owners of the land on which it is desired to build the stands.

Entries for the Sporting Commission Cup, to be run on the same circuit as the Grand Prix, only number nine, as follows:

1. Gillet-Forest (De la Touloubre).
2. Darracq (Wagner).
3. Darracq (Hanriot).
4. La Buire (————).
5. La Buire (————).
6. La Buire (————).
7. Porthos (Strickert).
8. H. I. S. A., Italy (————).
9. H. I. S. A., Italy (————).

These machines will cover about three hundred miles on exactly half the fuel allowance given to the Grand Prix racers. The contest was put forth as a rival to the German Emperor's Cup race, which has now obtained 92 entries, and was expected to unite a big number of machines of approximately the same horsepower as those for the German event, though running under entirely different conditions. With such a diminutive entry list the club officials have decided that it is impossible to run the race as a separate event, and the Sporting Commission Cup will consequently be run the same time as the Grand Prix. Here difficulties arise, for Wagner and Hanriot of the Darracq team and Strickert of the Porthos firm have been entered as drivers in both events. Should either of these firms object to the late change in the conditions of the race, there will be a deadlock. The failure of the Sporting Commission Cup could not be more complete, for, excepting Darracq, none of the five firms have had experience in long-distance speed contests.

WELCOMES THE GOLD CUP TOUR.

Commenting on the visit to Europe of American automobilists engaged in the American Gold Cup tour, Charles Faroux, one of the best known of French automobile writers, says that the project is one of special interest. "In the new world there are no roads; in the old countries, on the contrary, the national highways are one of the countries' glories. The organizers of the tour have wished to prove to the Yankees that a tour in Europe is not especially reserved to a few millionaires, but that a family of five can travel through these wonderful countries in automobiles cheaper than by rail, and in the hands of the agent who would treat them as so many bundles. This is not an American invasion, as some appear to think, for transatlantic manufacturers know full well that the hour of the Yankee commercial superiority will certainly not be in 1907. On the contrary, the desire of those engaged in the tour is to contemplate for once, and very widely, the marvelous panoramas of Eastern Europe. It is a project of the highest interest, which cannot fail to directly impress the prosperity of our tourist regions; that is why we will accord all our assistance to the American chauffeurs to assure them a welcome as worthy of them as of us."

NEWS BUDGET FROM BRITAIN.

LONDON, Feb. 20.—The chief recent event of competitive importance has been the preliminary test of the Side-Slip Prevention Competition. Out of the original total of forty-one devices entered, twenty-seven were rejected as impracticable at the examination of the drawings and withdrawals further reduced the number, with the result that only seven devices remained for the test at the Clement Talbot Works. The track had been carefully covered with a mixture of mud and soft soap, and on this compound the 'buses to which the devices were fitted had first to effect a sudden stop with brakes hard on, and in the second test a double right-left turn was attempted. The results were anything but encouraging, and the only effective device seemed to be Molesworth's six-wheeled vehicle, with back and front steering. However, the abnormal conditions created by the presence of the greasy compound must have materially affected the efficiency of the remaining six devices, and possibly better results will be attained in the long-distance trial in London streets, which completes the competition.

The 5,000 miles tire trials will be postponed till the spring of 1908. The best time of the year for these trials is February and March, and it has not been possible to make a start this month. Half of the trials will be run in England and the remainder in France.

Since the beginning of the year there has been the customary round of provincial exhibitions, few of which contain any improvements or alterations on the models introduced at Olympia. The show season will culminate in the Agricultural Hall Exhibition early in April, but before this event commences there is to be the big Commercial Vehicle Exhibition at Olympia, from March 7-16. The Society of Motor Manufacturers and Traders promotes this show, which is really an overflow of the November Olympia, and interesting evidence of progress in commercial vehicle and motor boat construction may be expected.

Probably the longest officially observed motor car trial yet entered upon commenced on Monday from the A. C. G. B. and I. clubhouse. A standard 30-horsepower Siddeley is now following a carefully mapped out tour of 10,000 miles through Great Britain in charge of the club's observer, who will note every delay and adjustment. A rather interesting record should result, particularly in the case of the tires, which are fitted with tubes of the new rubber substitute, Elastes. The claims advanced on behalf of this unpuncturable and resilient compound by many motor authorities will thus be afforded good opportunity of confirmation.

MINNESOTA AUTOISTS HAVE A BILL TO KILL.

MINNEAPOLIS, MINN., Feb. 25.—A protest against the Nelson "anti-automobile bill," as it is known, which has been introduced in the Minnesota Senate, was made by the Minneapolis Automobile Club at a meeting at which representatives of the St. Paul club were present. The automobilists characterized the bill as "too absurd for consideration." It is drastic in its provisions, reducing the speed limit materially, requiring examination of drivers and owners, and allowing county commissioners to close roads to automobile traffic whenever deemed necessary. A campaign for the passage of the bill has been started in the southern part of the State, and papers and legislators are being flooded with "anti-automobile" literature.

POST & LESTER CO. SETTLE AT THE HUB.

It has been rumored that the Post & Lester Company, the big supply dealers of Hartford, Conn., have been contemplating a descent on Boston for some time, and the report has now been verified. They are opening a branch at 815 Boylston street, which will be in charge of E. L. Thompson, formerly with the Angier Company. The new store will be in operation by March 15, and will carry a very complete line.

FINISHING POINT OF ATLANTA CLIMB—ROAD WAS EXCELLENT.
Photograph by Percy H. Whiting.

ATLANTA HAS A NOTABLE HILL-CLIMB.

ATLANTA, GA., Feb. 22.—The first hill climb ever held in Atlanta was run off to-day, and, barring the refusal to act of the timing apparatus, the affair went off smoothly.

The best time of the day was made by John Toole in Ed Inman's Stearns car. He covered the seven-eighths of a mile in 1:06 1-5, winning the free-for-all with a big margin.

Next to the Stearns and D. C. Lyle's Apperson, which took the hill in 1:19 2-5, Lowry Arnold's Buick runabout was the star of the collection. This car won the race for runabouts in 1:38 4-5 and the event for cars listing $1,500 or under.

A Stoddard-Dayton, with James Todd at the wheel, won the race for cars costing $3,500 and under in 1:25 1-5, and also, with the same car, the race for cars listing $2,500 and under.

Handsome cups were given in every event. So successful was this hill climb, in which there were twenty-nine starters in the various events, that local enthusiasts are planning an endurance run from Atlanta to Macon—a distance of about 200 miles over all kinds of roads, mostly bad, and a Fourth of July race, perhaps forty miles in length, from Atlanta to Roswell, Ga., and return.

APPRAISER'S DECISION REVERSED.

On a recent invoice of cars sent to this country by the Societe Mors, Paris, one of the machines was invoiced as worth 21,000 francs, while another was entered at 6,300 francs. They were turned over to Appraiser Fowler, who reported that the cars were of a value in excess of the invoice prices. An appeal was taken from this ruling, and in a decision by I. F. Fischer, the Board of U. S. General Appraisers sustained the importers, reversing the appraiser in the first instance.

STARTING POINT OF THE ATLANTA HILL CLIMB, FEBRUARY 22.
Photograph by Percy H. Whiting.

REASSURING SITUATION AT ALBANY, N. Y.

ALBANY, N. Y., Feb. 25.—So far, legislation affecting autos has not progressed beyond the committee and introduction stage. But three bills have been let out of committees, and they are all of a character desired by automobilists or not objected to except one; and that is desired by some owners who frequently drive to New Jersey or Pennsylvania, is retaliatory in its nature and not calculated to accomplish the object it seeks. These three bills are:

Assemblyman Young's bill amending the insurance law so as to permit the formation of companies to guarantee against loss or damage to property resulting from accident to a duly licensed automobile; or loss or damage resulting from accident to a duly licensed automobile. This bill has already passed the Assembly and is in the Senate committee on insurance. This is the farthest advanced of any of the auto bills.

The next in order of advancement is the G. H. Whitney bill, which was reported while the delegation of the New York State Automobile Association were in Albany last week and was shown to them and they expressed no objection to it and have not interfered with its progress. It is now on third reading in the Assembly. It is an act to fix and prescribe rates of toll for autos on toll bridges and toll roads. The law now gives the corporations owning the toll-bridges and toll roads the right to collect toll from drivers of horse-drawn vehicles. This is the first legislative measure which has seen fit to place the motor vehicle on an equality with the animal-drawn vehicle, and the autoists hail it as an encouraging sign of progress, since they have been submitting to restrictions which do not apply to other vehicles which injure the roads more than the automobile ever can. For the most part toll roads and toll bridges have been collecting tolls without this special warrant of law and fixing their own rates. The legislative committee of the State association deemed it a good bill to allow to pass, as it will establish a precedent for equality of vehicles on the highways.

The other bill which escaped from committee did so by reason of an oversight on the part of those watching the legislation here in Albany. It is the Weber bill, and is the retaliation measure to make non-resident owners of automobiles coming into this State register and take out a New York license, just as New Jersey and Pennsylvania laws require of New York autoists. This is the same as the Apgar bill in the committee on internal affairs, which the legislative committee opposed at the hearing last week so successfully that it was not reported. The Weber bill was sent to the general laws committee, which reported it out and it is now on second reading in the Assembly. Had Chairman Charles T. Terry made his argument before that committee it would probably have held the Weber bill as the Apgar bill was held. Mr. Terry informed the committee on internal affairs that the retaliation measure would do no good and it would only hit the two States mentioned above, and that in New Jersey the association's representatives had succeeded in convincing the authorities of the unwisdom of their law, and Mr. Frelinghuysen was preparing to repeal the objectionable clause.

Other Attempts in Automobile Law-making.

The bill of the late Assemblyman Stanley, to establish a State automobile commission to take care of the registration of automobiles and create a new State department with a legal end represented by a counsel at a fat salary, and a retinue of clerks to enforce the motor-vehicle law, is still in ways and means committee, where it died last year and where it is liable to remain.

That freak proposition of Assemblyman Stevenson to amend the motor-vehicle law to provide for a system of taxation of motor-vehicles by taxing each $2.50 per seat in said vehicle was torn apart artistically and completely as a legal proposition and as proper legislation of any sort by Attorney Charles T. Terry, who appeared before the Assembly committee on taxation for the New York State Automobile Association and the National Association of Automobile Manufacturers last week. It is an indefensible proposition, ridiculous in its terms, unconstitutional in form and altogether drastic and unusual in its penalty features. It is still in the committee, where it went on introduction, and even should the committee report it there is little chance of its being seriously considered.

Another vicious bill is the Hamn amendment to the town law, which has not been reported from the internal affairs committee, where a hearing was given on it last week. This bill in brief would confer upon any municipal corporation, such as a town, village or city, the right to enact its own rules and regulations for the use of public highways by motor-vehicles, and is an impossible proposition. Attorney Terry told the committee on internal affairs, and forced several of its members to acknowledge the justice and reasonableness of his contention, that no motor vehicle could use the highways at all under such conditions, as the bill sought to establish with a new and strange set of regulations on either side of an imaginary line dividing two towns or a town and a village. The legislators were insistent on some legislation which should properly restrain the automobilists who recklessly violate all rules of the road and take delight in causing discomfort and injury to others and showed it in their remarks on this bill at the hearing. But Attorney Terry argued that their proposed local regulations would not accomplish it, and that there was plenty of law now on the statutes, and the trouble was that those complaining did not learn its provisions and take proper means to enforce it. The same complaints at times could be made against reckless drivers of horses, both at night and in the daytime, but that did not warrant the enactment of oppressive, unjust and restrictive laws to govern the whole class of horse drivers, nor should it govern the minds of legislators in framing laws for the government of motor cars on public highways. The bill was not reported.

Another of the bills still in committee is the Northrup bill amending the motor-vehicle law to provide that "No person shall operate a motor vehicle on a public highway that is geared to run at a rate of speed greater than one mile in four minutes." This bill is in the general laws committee of the Assembly, where it was referred on introduction.

A measure introduced this week in the Assembly requires that automobiles be retained as security for the appearance of the person arrested for violating the law.

CONCERNING THE PROPOSED ILLINOIS LAW.

SPRINGFIELD, ILL., Feb. 25.—Some members of the Illinois legislature are objecting to certain provisions of the automobile bill introduced early in the session by Senator Humphrey. Opposition is heard particularly against a portion of Section 13 of the bill, which provides that "no city, town, or village, or other municipality shall have power to make any ordinance, by-law, or resolution limiting or restricting the use or speed of motor vehicles, and no ordinance, by-law, or resolution heretofore or hereafter made by any city, village, or town, or other municipal corporation within the State, by whatever name known or designated, in respect to or limiting the use or speed of motor vehicles shall have any force, effect, or validity, and they are hereby declared to be of no validity or effect."

The bill, however, would have motor vehicles used for public hire regulated, a provision in this respect reading "that nothing in this act contained shall be construed as affecting the power of municipal corporations to make and enforce the ordinances, rules and regulations affecting motor vehicles which are used within their limits for public hire."

A. A. A. TOURING BOARD REPRESENTS 32 STATES

THE Touring Board of the American Automobile Association for the current year has been announced by President W. H. Hotchkiss. It comprises 77 members and represents 32 States. While such a board in ordinary circumstances would prove unwieldy, it is understood to be the intention of Chairman F. B. Hower to divide the board up into numerous committees, each charged with some function and work important to the motorists of the country.

Chairman Hower has called a meeting of the board for Buffalo, March 1, at which time it will undoubtedly adopt board rules and subdivide its work. Among the representative motorists on this board are Paul H. Deming, Philip S. Flinn, H. W. Smith, J. C. Kerrison, Waldron Williams, L. E. Myers, Isaac Starr. The complete list follows:

American Automobile Association—Touring Board—1907.

CHAIRMAN, F. B. Hower, 760 Main street, Buffalo, N. Y.

SECRETARY, Dal H. Lewis, 760 Main street, Buffalo, N. Y.

CALIFORNIA—L. P. Lowe, 21 Presidio avenue, San Francisco; Chas. B. Hopper, 402 Laughlin Bldg., Los Angeles, Cal.

COLORADO—Dr. W. H. Bergtold, 610 California Bldg., Denver, Colo.

CONNECTICUT—Geo. W. Beach, 54 Main St., Hartford; W. L. Hatch, New Britain; Frank Miller, Atlantic Hotel, Bridgeport.

FLORIDA—Geo. E. Sebring, Daytona; Fred E. Gilbert, Jacksonville.

GEORGIA—Frank B. West, Macon.

ILLINOIS—A. D. DeMange, Bloomington; H. D. Grider, Decatur; L. E. Myers, 1117 Monadnock Bldg., Chicago; L. F. Hoy, Woodstock; N. M. Van Sicklen, 309 Michigan avenue, Chicago; F. H. Pietsch, Eighteenth and Canalport avenue, Chicago.

INDIANA—Herbert H. Rice, care of Pope Motor Car Co., Indianapolis; J. A. Spekenhier, Richmond; E. C. Briggs, Box 154, South Bend.

IOWA—A. H. Ruebsam, Davenport; Harold R. Wells, Des Moines.

KENTUCKY—Pike Campbell, Fifth Avenue Hotel, Louisville.

LOUISIANA—Hart D. Newman, New Orleans.

MARYLAND, Frank W. Darling, Pikesville; W. B. Littleton, Hagerstown.

MAINE—Chas. C. Adams, Portland.

MASSACHUSETTS—J. C. Kerrison, care the "Boston American"; R. C. Guptill, Malden; L. H. Greenwood, Gardner.

MICHIGAN—Paul H. Deming, 128 Lafayette avenue, Detroit; C. S. Mott, Flint; H. E. Shiland, Jackson; J. R. Jackson, Grand Rapids; Edwin S. George, Detroit.

MINNESOTA—Geo. S. Daggett, Minneapolis.

MISSOURI—Jas. G. Butler, 4484 West Pine Boulevard, St. Louis; W. W. Cowen, 307 Board of Trade Bldg., Kansas City.

NEBRASKA—D. C. Bradford, care the Bradford Kennedy Co., Omaha.

NEW HAMPSHIRE—Herbert O. Prime, 61 Union street, Portsmouth.

NEW JERSEY—Chas. D. Cook, Paterson; Geo. Frisbie, Asbury Park; Henry W. Leeds, Atlantic City; Chas. S. Van Syckel, Trenton; Geo. E. Blakeslee, 2565 Boulevard, Jersey City.

NEW YORK—F. E. Barnes, Binghamton; J. P. McMurrich, Oswego; R. H. Johnston, New York; Augustus Post, New York; Robt. E. Hopkins, Tarrytown; Howard Martin, Albany; Geo. H. Leonard, Auburn; F. M. Fast, Geneva; G. E. Mosher, Rochester; Chas. Jerome Edwards, Brooklyn; R. B. Billings, 21 1-2 Summit place, Utica; Waldron Williams, 254 West End avenue, New York; H. W. Smith, 701 East Washington street, Syracuse.

NORTH CAROLINA—Walter Sprunt, Wilmington.

OHIO—Foster H. Bradley, Cincinnati; Thomas Curtin, care the Curtin Williams Co., Columbus; F. E. Avery, 1197 Franklin avenue, Columbus; Chas. N. Coit, Cleveland; C. Gordon Neff, 3513 Teleford avenue, Cincinnati.

PENNSYLVANIA—Edw. Kneeland, 2301 Farmers' Bank Bldg., Pittsburg; Chas. J. Swain, Philadelphia; H. F. Rawll, P. O. Box 472, Harrisburg; Isaac Starr, 240 Dock street, Philadelphia; Philip S. Flinn, 320 Diamond street, Pittsburg.

RHODE ISLAND—Elliott Flint, 212 Union street, Providence.

SOUTH DAKOTA—F. D. Fitts, Madison.

TENNESSEE—S. T. Carnes, 316 Tennessee Trust Bldg., Memphis.

TEXAS—G. A. C. Haliff, San Antonio.

VERMONT—W. H. Riddle, Cottage street, Rutland.

WASHINGTON—Alfred Bornstein, 315 First avenue, South, Seattle.

WEST VIRGINIA—W. E. Minghini, Martinsburg.

WISCONSIN—Jesse L. Potter, Milwaukee; Richard T. Robinson, Racine.

VIRGINIA—Frederick Lewis, 510 Atlantic Trust Bldg., Norfolk.

CHICAGO WANTS THAT A. A. A. TOUR IN SOME MANNER

CHICAGO, Feb. 25.—The movement to have the Glidden Tour end in Chicago is gaining new supporters daily. The Chicago Athletic Club and the South Shore Club have now joined hands with Chicago Automobile Club and the Chicago Motor Club in an effort to secure the honor for Chicago. Both the Athletic Club and the South Shore Club would throw open their respective clubhouses for the entertainment of the guests should the committee see fit to make Chicago the objective point. The committee appointed last week by the Chicago Motor Club to endeavor to convince the Touring Committee of the wisdom of this choice of route has held several meetings, and is formulating plans upon which to act. This will include the extending of invitations to the Chicago Golf, Glenview and Onwentsia clubs to join with the Athletic, South Shore and Chicago Automobile clubs in keeping open-house for the Gliddenites should the committee end the tour in Chicago.

Activity of the Trade Association.

During the week the plans of the Automobile Trade Association for placing guide posts along the principal roads leading to Chicago and used by automobiles have assumed definite form. It is proposed to use a 2x24-inch signboard on a 5-foot angle iron post set in cement. The cost of these signs and the surveys which will have to be made will bring the cost of each sign up to at least five dollars for every one placed.

The second annual meeting and election of officers of the Trade Association will be held next Thursday evening. The ticket nominated as the "members' ticket" is as follows: President, Joseph F. Gunther; vice-president, W. J. Mead; treasurer, W. L. Githens; secretary, Thomas Hay. The officers and members of the Trade Association feel gratified with the results of its first year's work and look forward with hopefulness to the success of the contests which will be arranged for the summer in conjunction with the Chicago Motor Club. These include reliability, endurance, economy, and braking and skidding contests.

President Ira M. Cobe feels that these are red-letter days for the Chicago Automobile Club, as the membership is increasing by at least twenty each week.

MARYLAND CHAUFFEURS HOLD ELECTION.

BALTIMORE, Feb. 25.—At the annual meeting of the Chauffeurs' Club, which was recently held at the clubrooms in the Mount Royal Garage, the following officers were elected for the coming year: President, William Stevenson; first vice-president, A. R. Qualey; second vice-president, Fred Charpait; secretary and treasurer, W. D. Wehland; board of governors, William Stevenson, William Thornberg, John Harris and W. T. Carter.

Following the election of officers an enjoyable smoker was held. The club was organized in 1905 with a few members, and since then its membership has been considerably increased.

BUFFALO'S SHOW A RECORD BREAKER.

BUFFALO, N. Y., Feb. 23.—Dai H. Lewis, manager of the Fifth Annual Show of the Automobile Club of Buffalo, said to-night: "This has been the most satisfactory exhibition since shows were held in Buffalo, and it means that there will be a similar event in 1908 on a much larger and grander scale. The attendance was larger and the sales were a substantial increase over a year ago."

Amid the screech and din of hundreds of automobile horns, the show came to its end in Convention Hall to-night. Thousands of Buffalonians attended the show every night, and delegations came from Rochester, Syracuse, Toronto, Niagara Falls, Lockport and small cities. "Sold" signs were many, and every exhibitor had one or more on the machines he displayed. So successful has been the 1907 exhibition that the talk of abandoning local automobile shows, which was the rumor several weeks ago, has dissipated, and the 1908 automobile show is already assured. The Great Arrow cars had many admirers, and some sales are reported as a result of their presence in the hall. The Thomas Flyers also called forth an abundance of admiration, while many persons desiring horseless transportation gazed admiringly at the Babcock electrics. The non-stop Thomas was on exhibition a part of the week, and the Thomas Vanderbilt car was also shown. The Great Arrow, which won the Glidden trophy, was shown by the Pierce Company.

MABLEY FAVORS ANOTHER OUT-DOOR SHOW.

When approached on the subject of an "automobile trade show week," in accordance with the suggestion made at the last meeting of the New York Automobile Trade Association, Carleton R. Mabley, of Smith & Mabley, Inc., was not altogether enthusiastic for reasons that appear.

"Of course, like any other new and untried proposition, it is hard to say whether or not the plan would be a good one," he said. "My personal opinion, however, is that in view of the fact that the various New York representatives receive their new models at different times, it would be an awfully hard proposition to select a week that would suit even the majority. The outdoor show that was held last year under the auspices of the trade association, as far as I could learn, was very successful, inasmuch as the event was in its infancy, being tried then for the first time. Many things were brought to the notice of the association, which, if the show were held again, would be taken advantage of and bettered. Therefore, I feel that another outdoor show would be preferable to a spring show week."

GOVERNOR WILL OPEN MINNEAPOLIS SHOW.

MINNEAPOLIS, Minn., Feb. 25.—The Northwestern Automobile Show, to be held next week, is rapidly approaching completion as to detail of decorations and exhibits. The Chicago show decorations have been received and are being installed, and an elaborate scheme of adornment has been built up around them. An elaborate program in connection with the show has been laid out, including music by the Minneapolis Symphony Orchestra. In the evenings noted soloists will appear. Governor Johnson and Mayor Haynes of Minneapolis are to officiate at the opening of the show, Saturday, March 2.

The entire Northwest is tributary to Minneapolis and St. Paul in the automobile field, and dealers, owners and prospective owners from all parts of Minnesota, Wisconsin and the Dakotas, and as far west as Montana, will attend the exhibition.

NEW HAVEN'S SHOW TO BE HELD MARCH 21-30.

NEW HAVEN, Conn., Feb. 25.—Arrangements have been completed for an automobile exposition to be held March 21-30 in the Second Regiment Armory. All of the local dealers will be represented, some of them entering as many as eight or ten cars. The Bridgeport Motor Company will have an exhibit of motor boats and engines, and two other large Bridgeport firms will be represented.

CLEVELAND SATISFIED WITH ITS SHOW.

CLEVELAND, O., Feb. 23.—George Collister, manager of the Cleveland automobile show, to-night said: "This show has done its share in demonstrating to the public the promising present and the great future of automobiling. Local shows unquestionably are of substantial value to the dealers of the cities in which they are held."

All week long Central Armory has held interested crowds, afternoon and evening, and the exhibitors, with scarcely an exception, expressed themselves as thoroughly satisfied with the results that have been secured. The artistic decorating of the show, with its absence of signs in the center of the building, was an attractive feature which brought forth much praise. It was a case of the commercial instinct being subordinated so as not to interfere with the artistic conception of the decorator.

While Clevelanders buy cars made in other cities, it is a fact that the majority of them make their selections from the home product, all of which were well represented in the show, and of course included Winton, Peerless, White, Baker, Cleveland, Royal, Gaeth, and R. & L. electric.

One of the impromptu pleasant social gatherings of show week was a dinner in the Bohemian room of the Cleveland Automobile Club, at which George Collister and W. F. Sayle were the hosts of the occasion. Those present included D. J. Post, W. E. Metzger, J. W. Gilson, James Becker, "Gov." Fred Castle, O. J. Woodward, G. J. Bradley, J. Cramp, L. C. Boardman, T. J. Wetzel and A. G. Batchelder. The rooms of the Cleveland Automobile Club answered for a general gathering place every evening, and Secretary Asa Goddard, in behalf of the club, extended the hand of welcome to the many visitors. One of the recent subscribers to the club's fund for the building of a model highway in the suburbs of Cleveland was John D. Rockefeller, who gave substantially.

A. M. C. M. A. TO FATHER ENGINEERS' SOCIETY.

According to officers of the American Motor Car Manufacturers' Association, the business of building automobiles is the only great industry that has no organization whose avowed purpose is general scientific research of the subjects of most interest to the members of the industry supporting it. That is, there has not been up to the present time any organization or society on this order that is open to all who wish to enter, regardless of trade affiliations. With this in mind, the American Motor Car Manufacturers' Association plans to foster an organization to be known as the American Society of Automobile Engineers. The members of the former will form a nucleus for the new organization, any designer of known ability being afforded an opportunity to participate in its meetings, and membership being open to all automobile engineers, whatever their connections may be.

It is expected that General Manager Alfred Reeves will issue a call for a meeting to organize the new society within a very short time. In addition to this, the A. M. C. M. A. is planning the establishment of a laboratory to further a higher grade of work of a similar character, the benefits of this, however, being confined to the membership of the organization. An option has been obtained on an old factory building at Yonkers, N. Y., and it is expected that the negotiations now under way will shortly be brought to a successful culmination, in which case a lease of the building will be taken and a complete plant for chemical and mechanical tests will be installed. Work on both the projects in question will be pushed, it being intended to hold the first meetings of the new organization during March, as it is planned to make them bi-monthly during the busy season of the year.

BOUGHT CARS OF HOME MANUFACTURE.

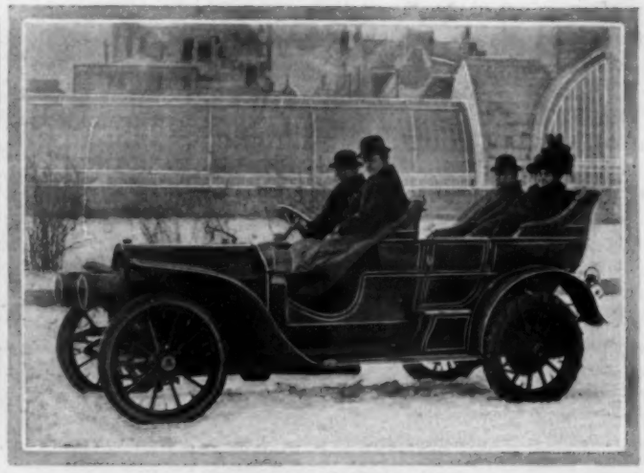
SPRINGFIELD, MASS., Feb. 25.—The Board of Fire Commissioners has decided to place an order for two 30-horsepower Model H Knox machines for the use of the chief and deputy chief of the department. The order was placed through Charles R. Culver, the city sales agent.

DAVID L. CANNON A PROGRESSIVE MICHICAN AEROCAR OWNER.

AN UP-TO-DATE MICHIGAN STOCK BUYER.

DETROIT, MICH., Feb. 25.—With steady strides, the automobile is rapidly pressing forward and is being used to shorten distances and time in almost every line of work. One of the very latest uses for an automobile is novel indeed. David L. Cannon, a drover and stock buyer in the eastern part of Michigan, uses an Aerocar for getting about the country and looking up stock among the farmers. Many miles in a day can be covered in this manner, and the time spent between the different homes is practically nothing as compared with what it was when he made the same trip with a team of horses. It is during the winter months that th greatest rush of business is on. With his air-cooled car he drives up to a farm house, shuts off the power, leaving the machine anywhere, and is soon engaged in trying to make a deal with the farmer for his fatted cattle. This drover is a student of human nature. He has learned that one of the nearest ways to a man's heart is through his stomach, but that you can get pretty close by pleasing him. It is, therefore, a common occurrence to see him spinning along the road with the car filled with broad smiling agriculturists, who, perhaps, had never before ridden in a horseless vehicle. After such a ride very few objections are made even if Dave's price for beef on the hoof is not quite what they had expected.

The accompanying picture shows this up-to-date drover on a return trip, driving a herd of young cattle. He rides in his car, toots the horn, and, with his two Collie dogs, drives his purchases in a manner that is in keeping with the enterprising spirit of the man and the times.



MISS ZABELLE ENJOYING A CONSTITUTIONAL IN HER POPE-TOLEDO

AUTOMOBILING AS A WINTER PASTIME.

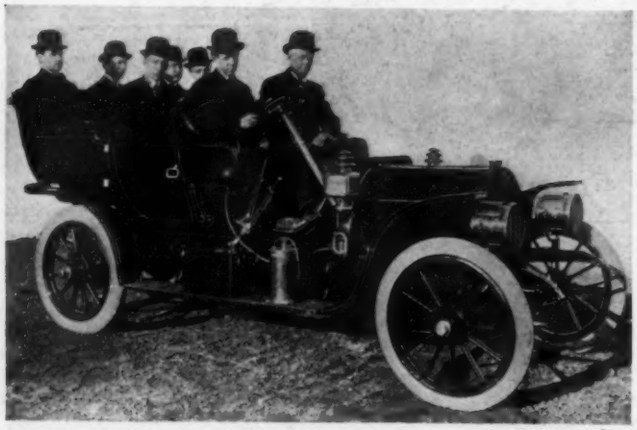
In its earlier days the automobile was a fair-weather bird pure and simple. Rain was sufficient to cause it to stay at home, and mud proved such a strong deterrent to its underpowered engine that pleasure was only to be found beneath fair skies and along smooth roads. At the head of the column is shown Miss Flora Zabelle taking a constitutional in Chicago's parks with the aid of her new 50-horsepower 1907 Pope-Toledo, while below, the leading ladies of one of the companies now playing in New York, Miss Agnes Cain Brown and Miss Lillian Hudson, are shown in Miss Brown's new 22-horsepower Berliet, which she has used regularly to take her back and forth between her home at Tarrytown-on-the-Hudson and the theater in the city.

Major C. J. S. Miller is seen in his new American Mors. Automobiles have been his hobby, and it is not too much to say that he has probably owned as large a number and as great a variety of different makes of cars as any amateur on this side of the Atlantic, not even excepting Colonel John Jacob Astor, who also has a strong penchant that way. For the first ten days of his American Mors ownership the Major ran up a total of 600 miles, all of which were through snow and no little part of it through heavy drifts, which were negotiated without difficulty.

Equipped with chains on the drivers to procure the necessary traction, the modern automobile no longer fears the snow. It is a detriment, to be sure, for six inches or more of the "beautiful white" constitute a speed-reducer that has a marked effect on even the most powerful of cars, while heavy drifts frequently call for a shift of gear even on the level.

MAJ. C. J. S. MILLER WINTER RIDING IN HIS AMERICAN MORS.

MISS AGNES BROWN'S BERLIET WHICH PLOUGHS THROUGH SNOW.



A 1907 MOON: DESIGNER L. P. MOOERS AND J. W. MOON.

MOTOR PARTS COMPANY, W. W. BURKE, MGR.

With headquarters at 25 West Forty-second street, New York City, a capitalization of $100,000, and with W. W. Burke as its president and general manager, the Motor Parts Company is announced as a selling corporation partaking of the nature of a co-operative buying company. Mr. Burke will be well remembered as manager of the Electric Vehicle Company's Boston and New York branches, and associated with him are some prominent automobile tradesmen of wide experience.

"One of the greatest evils in the automobile business has been the taking of orders by parts people in excess of their production," said Mr. Burke, "and this has resulted in manufacturers being held up for their parts. A maker of parts would take orders for 6,000 or 7,000 sets to cover himself thoroughly, when he knew that his output would not be more than 3,000 sets. It was to remedy this trouble, besides securing inside prices, that a number of prominent manufacturers have interested themselves in this idea, which I have had in mind for more than a year. The company will handle only the very best products and only after they have been tested out in our laboratory at Yonkers.

"It is the idea of those interested to push only one article in a line, and to be able to assure our customers that the article in question is the best. The company intends to take outputs on a reasonable basis, thus relieving factories of the expense of selling departments. The accounts which we start with are such as to give the company a standing at once.

"The Motor Parts Company will be a sort of clearing house between the maker of the parts and the builder of the automobile, with the former being assured of a sale for his output and the latter being assured of deliveries and proper prices.

EZRA KIRK A TOLEDO GARAGE MAN.

Ezra Kirk, a well-known cycle trade graduate to automobiling, has resigned as sales manager of the E. R. Thomas Motor Company, of Buffalo, and in company with a brother will conduct a mammoth garage in Toledo, Ohio. Mr. Kirk's old home is in Toledo, from which city he went to Buffalo.

R. H. CRONINGER TO SELL PENNSYLVANIA CARS.

R. Harry Croninger, formerly Stoddard-Dayton sales manager, has gone with the Pennsylvania Auto Motor Company, Philadelphia, to act in a like capacity. It is understood that the Pennsylvania company intends to make extensive additions to its factory in the near future.

NOTABLE ADDITIONS TO EMPIRE TIRE STAFF.

H. H. Githens and W. R. Whitlock are well-known additions to the selling staff of the Empire Automobile Tire Company, of Trenton, N. J. Both were formerly of the G & J Tire Company.

C. A. BENJAMIN TO BE AEROCAR ADVOCATE.

C. Arthur Benjamin, one of the pioneers of the automobile trade, first with the Locomobile Company of America, then with the H. H. Franklin Manufacturing Company, and now leaving the sales managership of the Babcock Electric Carriage Company on March 15, will become vice-president and general manager of the Aerocar Company, of Detroit. Mr. Benjamin's change of base was somewhat unexpected, but it is understood that the inducements offered were of a substantial character.

WARNER LEAVES MUNCIE PARTS COMPANY.

H. L. Warner, up to recently connected with the Muncie Auto Parts Company, Muncie, Ind., has just severed his connection with that concern, and will organize a corporation to be known as the Muncie Gear Company, which will manufacture bevel and spur gears, sliding-gear transmissions of both types, disk and cone clutches, control levers and the like.

JAMESON GOES WITH DAYTON INTERESTS.

Charles Jameson, late of the Orlando F. Weber Company, Chicago, has given up the retail end of automobile selling for the wholesale, having just gone with the Dayton Motor Car Company as sales manager, and will from now on push the Stoddard-Dayton cars. He takes the place of R. Harry Croninger, who resigned recently to go with a Pennsylvania concern.

L. D. PARKER, BILLINGS & SPENCER DIRECTOR.

At the annual election of the Billings & Spencer Company, Hartford, Conn., which was held last week, L. D. Parker, formerly president of the Hartford Rubber Works Company, was elected a director to fill the vacancy caused by the death of Franklin Clark. All the other officers who served during the past year were reelected.

HOW FRANKLINS ARE SHIPPED NOWADAYS.

SYRACUSE, N. Y., Feb. 25.—The photograph gives a very clear idea of the cars now being furnished by the Lackawanna Railroad for automobile purposes. In construction these cars are cut along the line of furniture and wagon cars, except that the doors, instead of being directly opposite one another, are staggered in such a way as to make extremely easy the loading of motor cars. In size they are roomy, being high and wide, the inside measurements being 40 feet long, 13 feet 11 3-4 inches wide and 9 feet 4 5-8 inches high. These measurements are such as to admit of loading the largest Franklin cars with the top up, as will be seen in the photograph.

AUTO CAR NOW SUPPLIED BY LACKAWANNA R.R.

IN AND ABOUT THE AUTO GARAGES

ONE of the popular garages for automobilists touring in Northern New Jersey is that of the Perkins Automobile Company at Rockaway. This thriving Jersey town is situated on the Rockaway river, near Dover, on the road leading out from Newark to the north of the Oranges, and through Montclair, on

A MODERN GARAGE AT ROCKAWAY, NEW JERSEY.

the direct route to Port Jervis, N. Y. As will be noticed by the photograph, the garage is roomy, and the entrance arrangements show an appreciation of up-to-date requirements. The Perkins company are also agents for the Corbin car in that vicinity.

Rochester's Big Garage to Be Extensively Enlarged.

ROCHESTER, N. Y., Feb. 25.—Fulton Avenue Motor House has purchased the property adjoining it in the rear, and the buildings on the newly acquired property will be connected with the Fulton, thereby making one of the largest garages in the city. The property purchased has a frontage on Lake avenue of 92 feet, and is 225 feet deep. Lake avenue is one of the principal business and residence streets of Rochester, and is the main boulevard to Lake Ontario. During 1907 the business will be conducted under the name of "The Autohospital," as the management of the concern has been somewhat changed. Howard M. Stone, who has been exclusive manager for the past two years, has taken into partnership with him Charles D. Barrows, who was connected for four years with the Knox Automobile Company.

A Modern Garage for Vancouver Island.

VICTORIA, B. C., Feb. 20.—The Pilmey Automobile Company will have its new garage on James Bay ready for occupancy on May 1. The total cost of the building is estimated at $10,000; there will be housing room for about forty cars. Advantage will be taken of the growing tourist traffic on Vancouver Island to run an automobile tally-ho with a capacity for carrying sixteen persons. Trips will be made at stated intervals during both winter and summer to various places of interest. The company, which will handle English cars exclusively, has a capital stock of $100,000, subscribed by Victoria people.

Winnipeg to Have a Modern Garage at Once.

WINNIPEG, MAN., Feb. 20.—Canada's most progressive city is to maintain its reputation by shortly erecting the most modern garage that the entire Dominion can boast of. Though not as well situated regarding population or opportunities for the use of the automobile, Winnipeg is about set out to astonish its sister cities further east. The new building is to be erected for Joseph Maw, and construction will be started as soon as the weather permits, which in the Northwest means much later than here. The property, which has a frontage of 66 feet and a depth of 200 feet, is now occupied by a livery stable, so that it will be another instance of horse giving way to the automobile. The construction will be of steel and brick, and though the entire area will be covered by the garage there will not be a post to obstruct the floor. The Maw Company, owners of the new garage, have just received a new 12-passenger sightseeing 'bus which will be put into active service immediately.

Increased Garage Facilities at Burlington, Vt.

BURLINGTON, VT., Feb. 25.—Plans have been completed for the erection of a new building which will double the present car capacity of the Van Ness garage, in this city. When completed there will be accommodation for about twenty-seven cars. A feature of the garage which will be welcomed by tourists visiting Burlington will be the twelve-passenger Rapid sightseeing automobile recently purchased by Capt. E. P. Woodbury, of the garage. It will be used on excursion parties, and will also make regular trips to the wharf of the Champlain Transportation Company, on Lake Champlain, in place of the horse-drawn 'bus previously used. The Van Ness garage now has the agency for Western Vermont of the Rapid, the Reo, and the Premier cars.

GARAGE NOTES FROM ALL OVER.

Yakima, Wash.—The Yakima Garage and Automobile Company of North Yakima, Wash., has been incorporated, with a capital stock of $5,000, by R. H. and A. F. Mitchell.

Houston, Tex.—On a recently purchased lot on Travis street, just above Texas avenue, Levy Brothers are building a brick structure designed as an automobile garage.

Ft. Dodge, Ia.—W. W. Eggers, formerly of Nora Springs, has signed a lease of the Crawford building on Public square, where he will open and operate an automobile garage.

Los Angeles, Cal.—A. J. Crawford has secured the contract to build a two-story brick building at the southwest corner of Main and Fifteenth street for George Wilson King. The lower story will be arranged for an automobile garage.

Philadelphia.—J. E. & A. L. Pennock, of this city, have just completed plans for a three-story and basement garage to be erected at 216-220 North Broad street. Construction will probably be undertaken as soon as the spring opens.

Canton, Ill.—James Duvall and A. M. Champ have just completed the purchase of a lot 40 by 80 feet on East Pine street, and will immediately begin work on the erection of a one-story garage building. This will be of brick, and will cover the entire lot.

Toledo, O.—Mirk Brothers have leased the ground floor of the building about to be erected on Jefferson street next to the Zenobia building, and will fit it up as a garage as soon as ready for occupancy. It has a frontage of 50 feet and a depth of 100. Construction has already been begun.

Wilmington, Del.—On April 1 the Wilmington Automobile Company, which now occupies half of a large building at Delaware avenue and Tenth street, will take possession of the re-

mainder of the building, thus more than doubling the present floor space. A new feature will be separate doors for entering and leaving the garage.

Chicago.—The automobile business is about to invade the residence district in Michigan avenue, south of Twenty-sixth street, Richard T. Crane having sold his large vacant holding in this block to purchasers who plan to erect upon it a five-story building for the purpose indicated. The proposed building will cost about $100,000. The names of the purchasers are withheld.

Des Moines, Ia.—The garage of the Iowa Automobile Company is being entirely remodeled. The south twenty-two feet of the large room is being partitioned off for a retail sundries room. A new office will be built and the old one torn down. A new front will be put in and a new floor laid, and several of the center supports will be removed to give more room. New machinery is being added to the repair department.

Washington, D. C.—The corporation commission of Virginia has granted a charter to the Dupont Garage Company, of Alexandria, Va., which will conduct a general automobile business in Washington, D. C. The capital stock is to be not less than $29,000 nor more than $50,000. The officers and incorporators are as follows: W. S. Washburn, president; G. P. Sacks, vice-president; C. F. Sponsier, secretary; R. A. Klock, treasurer. The company has a large garage on M street, in Washington, and handles the Cleveland, Rambler and Orient.

Charleston, S. C.—The Army Cycle Manufacturing Company, the first concern to introduce gasoline cars in this section, is now planning to erect a modern garage adjoining its present establishment at 130-132 Meeting street. The building will be of brick, with cement floors, and will have a plate glass front. Included in its equipment will be a modern repair shop fitted out with machine tools of every kind needed for doing auto repair work. Among the recent sales made by this concern has been one of a four-cylinder Buick to the local fire chief.

MANY TOLEDO GARAGES AND AGENCIES.

Toledo, O., Feb. 25.—Local garages are getting in their stock of 1907 cars for prospective purchasers who are becoming more numerous every day. The Kirk Brothers have on hand a goodly number of Thomas Flyers at their Jefferson street garage, and incidentally it might be stated that before the season progresses very far this company will be installed in one of the finest garages in the city. C. S. Ashley is now starting the erection of a building on Jefferson street, between Tenth and Michigan streets, which is to be occupied by Kirk Brothers as a showroom. It will have a floor space of 50 by 100 feet.

Adjoining the site of the Kirk Brothers' new garage is located the Lichtie garage, which will continue to handle the Cadillac machines. To better display his automobiles, Mr. Lichtie has just had a large electric sign placed in front of his garage.

The Jackson machine will be introduced to Toledo buyers by the Rivers-Jacoby Automobile Company, which is located on Monroe street in the residence section. Along with the newcomer, the concern will handle the Rambler. Both stocks are well represented, but both are to be greatly increased as soon as the floor space of the company can be enlarged by an addition.

The Atwood Automobile Company, also located on Monroe street, will act as sales agents for the Elmore, Franklin, Pope-Waverley and Pope-Hartford cars during the coming season. The company has the largest garage in the city, being able to house 125 cars. Shipments of all these cars have been received.

The Central Automobile Company, on Ontario street, not far from Jefferson, will sell the Maxwell cars, a large consignment having just arrived. The company will also handle the Mitchell.

The Toledo Car Company, on Madison street, will act as sales agents for the Pope-Toledo cars and, with the home of the car in this city, the company ought to have something of an advantage over its rivals.

The new garage of the White Company, which the Spitzer Brothers are erecting for it at 1211-15 Madison avenue, will be open within a few days, and the White cars will be shown there.

ATLANTA HAS LARGEST SOUTHERN GARAGE.

Atlanta, Ga., Feb. 25.—There has been a considerable shake-up in the Atlanta automobile trade since the beginning of last season. The Atlanta Automobile Co., at that time a large concern, has been absorbed by the Capital City Automobile Co., a stock company backed by very considerable capital. This company has secured the old Peachtree Auditorium and fitted up the largest garage in the South. The cars carried by the Capital City Co. are the Stevens-Duryea, Peerless, Stearns, Franklin, White and Buick.

In addition to this corporation there are three other dealers—F. C. Steinhauer, 56 Edgwood avenue, who sells Thomas cars; James B. Todd, 322 Peachtree street, who handles the Stoddard-Dayton line, and John E. Smith, 122 Auburn avenue, who has the agency for the Reo line.

A "MOOSE" COLUMBIA DINNER AT HARTFORD.

Hartford, Conn., Feb. 28.—Sixty members of the office and factory force of the Electric Vehicle Company attended the annual moose dinner, the *pièce de resistance* of which was supplied, as usual, by George E. Risley, of the sales department, who once a year travels to the wilds of Maine and returns therefrom with a moose. Three consecutive seasons has Mr. Risley been successful, and the third affair, held at Parson's Café, was the banner one of the series. Each course on the menu bore the name of some part or accessory of a motor car, and "Deacon" Henry A. Castle made a versatile toastmaster. Speeches and recitations were rendered by Messrs. Castle, Higgins, Hill, Bee, Wilson, Hathaway, Whitney, Nuckols, Fisher, Strout, and Risley, with songs sung by Messrs. McAneeny, Mertens and Hathaway. While the menu bore the caption of "All Speed Limits Removed," the autoists observed a reasonable pace and none was apprehended for scorching, or flooding his carbureter with alcohol.

DURYEA POWER COMPANY GOES UNDER.

What has long been predicted by the business-wise, if mechanically unlearned, has at last come to pass. Charles E. Duryea's persistent adherence to ideas that were beautiful theoretically and mechanically, but not practical from the point of view of the public demand, has brought him to financial ruin. How the company has managed to exist has long been a matter of wonder, so that its downfall is not wholly unexpected. It has always been hampered for lack of capital, and was finally compelled to go to the wall. The Pennsylvania Trust Company has been appointed receiver, and it is rumored that Herbert N. Sternbergh, of Reading, Pa., one of the stockholders, will buy in the plant and consolidate it with that of the Acme Motor Car Company, which he recently bought from the receiver of that concern.

BRISCOE MFG. CO. DENY UNAUTHORIZED RUMOR.

Detroit, Mich., Feb. 25.—Owing to the statements which have been circulated among the trade that the Briscoe Manufacturing Company, of Detroit, Mich., intends to discontinue its radiator business, it has been found necessary to issue an official denial. The mistake probably arose from the fact that the company has discontinued the manufacture of galvanized ware, stoves, etc., this being rendered necessary in order to make room for the manufacture of radiators and other automobile parts. The Briscoe Manufacturing Company is now making plans for a larger business. In addition to the new brass foundry, a complete machine shop for automobile work has been opened.

BRIEF ITEMS OF NEWS AND TRADE MISCELLANY

John Duer, of Hastings, Neb., has disposed of his automobile business to C. L. Jones & Company, who will occupy the First street garage.

In the issue of THE AUTOMOBILE for January 31 the Holsman Automobile Company's machine was described as having "rope" drive. The company states that this should be "steel cable" drive.

The DAC Automobile Supply House controlled by Wyckoff, Church & Partridge, has changed its name to the W. C. P. Automobile Supply House, and Raymond H. Weaver, well known to the local trade, has been appointed manager.

John C. King, of Chicago, has ordered a 35-horsepower Fiat chassis to be fitted with a four-seated runabout body. He will take delivery of this car this month at Turin, Italy, and will spend the entire summer touring about Europe.

At a recent meeting of the D. C. Stover Company of Freeport, Ill., it was decided to change the name of the firm to the Stover Motor Car Company. For some time the engineers of the company have been busy on an engine for railroad and track inspection trips.

An order has been received by the Ajax-Grieb Rubber Company for 5,000 sets of tires for the well-known runabouts built by the Ford Motor Car Company. The tires will be shipped in pro rata lots during the next seven months. The Ajax people now occupy the three floors in the building at Broadway and Fifty-seventh street, with the factory at Trenton, N. J.

M. C. Hutto and Claude Nolan, of Jacksonville, Fla., have closed a deal with the Clark Auto & Launch Company whereby they become the sole owners of the plant, comprising fourteen second-hand automobiles, machinery, tires, tools, etc., and two new touring cars. This combined equipment will give the firm one of the most extensive repair shops and supply stores in the South.

While standing outside the Coliseum at Chicago at the end of the show week, the Stearns demonstration car was stolen. The automobile was a 30-60-horsepower model, bearing factory No. 202. It was painted with red sear panels, black under body and red running gear, and was equipped with a folding glass front. The F. B. Stearns Company would be glad to hear from any person having observed this car.

The limousine body building department of the Packard Motor Car Company, of Detroit, having completed its work of building the season's output of limousines for Packard "thirty" chassis, the company has decided to build a special lot of limousine bodies for summer delivery. These will be of standard Packard design and will be interchangeable with the touring body on either the Packard "twenty-four" or the "thirty."

One of the old landmarks of Main street, Buffalo, the Sheldon homestead, is to be removed to make room for a new automobile store for the Imperial Motor Company, of Buffalo, of which C. B. Penny is president. The building, which will be two stories in height, will have a frontage from 1094-1100 Main street and a depth of 436 feet to Linwood avenue. A selling business only will be carried on, the building not to be used as a garage.

The Court of Common Pleas of Berks county, Pa., has entered a decree conveying to H. M. Sternbergh, of Reading, Pa., the entire property and assets of the Acme Motor Car Company of that city, terminating the receivership of D. J. Driscoll, which commenced in July, 1906. The price paid was $66,000, and creditors will be paid in full therefrom by the receiver. Pending the organization of a new corporation the Acme Motor Car Company's business is continued without interruption by the purchaser.

A tester for the Wayne Automobile Company, of Detroit, Mich., who was discovered with the nose of his machine firmly planted against the factory wall, the high gear in and the rear wheels spinning merrily over the road, retains a rather unpleasant memory of the result of his inventive genius. He was trying to demonstrate to his own satisfaction the pulling powers of the engine and the staying qualities of the clutch. However, so pleased were the officials of the company with the idea that it was decided to submit every car to the test before shipping.

"Captain the Hon." William Stanley, noting the difficulty of beginners and others in the matter of speed-gear changing, set himself to design a device which would automatically and efficiently perform the work, remarks an English exchange by way of introductory to a description of the mechanism in question. It further describes a test of the device, which is said to work "charmingly" and in a most amazing and satisfactory manner. A car that will dispense with the services of a driver altogether should be next in order.

According to the figures which have been compiled at Albany by a Rochester automobile agent, 1,525 automobiles have been licensed in Rochester up to February 15. The automobile man was put to considerable expense to get the figures from the State records and believes the following numbers of the makes in use in that city to be authentic: Cadillacs, 167; Columbia electrics, 135; Wintons, 75; Packards, 59; Fords, 56; Franklins, 55; Popes (Pope-Toledo, Pope-Waverley, Pope-Hartford), 51; Olds, 48; Columbus electrics, 32; Bakers, 21; Jacksons, 13; Royals, 13.

NEW AGENCIES ESTABLISHED.

W. C. Jaynes & Company, 721 Main street, Buffalo, N. Y., have been appointed agents for the Royal.

The McDuffee Automobile Company, of Chicago, will very shortly move into the new branch salesrooms and garage in Milwaukee.

The George Lowe Company, 509 Tremont street, has taken the Boston agency for the American Mors, manufactured by the St. Louis Car Company.

The International Automobile Company, Montreal, is about to erect a $40,000 garage on St. Catherine street and will represent in Canada the Dragon car, and for Eastern Canada the Wayne and Gale lines.

New agencies established by the Wayne Automobile Company are as follows: A. F. Solliday, Milwaukee, Wis., entire State of Wisconsin; Johnstown Automobile Company, Johnstown, Pa.; P. Pawler, Calumet, Mich.

W. W. Haskell has been appointed manager of the New York branch of the automobile oil department of the Alden Speare's Sons Company, of Boston. The New York branch of this firm is located at 654 West Thirty-fourth street.

Toronto, Can., has obtained a new automobile show room and garage, recently opened at 6 East Adelaide street by the Toronto Automobile Company. The new firm will handle all the well-known Pope models. W. R. Kicks is manager of the company.

Frank F. Weston, sales agent for the R. H. Smith Manufacturing Company, announces that his firm has leased the store, 1503 Michigan avenue, Chicago, to open a branch for the sale of the Springfield Motometer. W. L. Bowman will act as Western branch manager.

The Firestone Tire & Rubber Company will shortly open a Pittsburg branch at 5904 Penn avenue, East End, one square from the center of the "bunch." A complete stock of solid and pneumatic tires will be kept and a first-class tire repair shop will be installed.

A strong combination has been formed in New Jersey to handle the Lozier car in the eastern section of the State. Salesrooms have been opened at 17 Bank street, Newark, and it is proposed to establish branch headquarters in other localities. The members of the firm are C. Linkroum and L. W. Smelser.

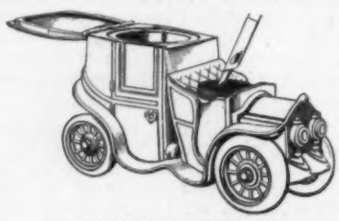
Automobile dealers in Indianapolis, Ind., are constantly adding to their agencies and more than twenty-five foreign lines will be represented in that city this season. The Indiana Automobile Company has just taken the State agency for the Pope-Hartford, Thomas, and Baker Electric lines; the Gibson Automobile Company has contracted for the agency of the Logan Construction Company and will make a specialty of one and two ton trucks.

OLD CARRIAGE FIRM ENTERS AUTO BUSINESS.

The Hume Carriage Company, one of the oldest firms engaged in the carriage industry, has opened an automobile department in connection with its works at Amesbury, Mass. A specialty is made of all styles of high-grade automobile tops in leather, twill or khaki. Repair work and doing over of automobile bodies will in future be an important branch. The company will carry automobile patent bumpers, patent foot rests which can be raised or lowered to fit any person, patent folding seats for limousine and touring cars, as well as a full line of headlights, searchlights and lamps of the best makes.

INFORMATION FOR AUTO USERS.

Auto Jewelry Novelties.—Automobile jewelry is one of the important lines handled by Chas. E. Miller, manufacturer, jobber, exporter and importer, of 97-101 Reade street, New York. The jewelry line is a branch of a large automobile supply trade, and includes such

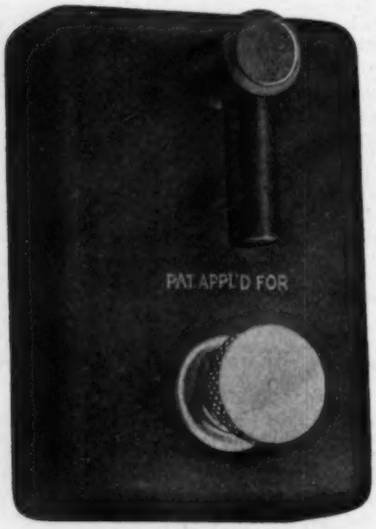


AUTOMOBILE INKSTAND.

articles as charms, hatpins, and fobs copied from the automobile and automobile parts. The latest of these interesting novelties is the automobile inkstand, illustrated herewith. The top of the car opens, revealing an ink well. Other articles made from the same model are an ash receiver, match holder, jewelry case and pin cushion. All these are finished in a rich ormolu gold or French gray silver, and the length is 5 1-4 inches and height 3 1-8 inches. The price in either style is $2 each.

The firm's 1907 catalogue has just been prepared, and can be had upon request.

Novel Lock Switch.—With the constantly increasing spread of knowledge of how to operate automobiles, and particularly in view of the strong temptation held out to the unscrupulous chauffeur out of work to make way with a car standing at the curb, a lock of some kind becomes an absolute necessity. And the great trouble with any form of lock requiring a key is that the owner himself most often mislays the key and has to smash the lock. To remedy this and provide a simple and effective lock which is proof against anyone but the owner or employee with knowledge of its working, Dr. Frank W. Brandow, of Pittsfield, Mass., has devised a simple combination lock. But unlike the usual article of this kind, there is no dial or number plate, the lock being operated solely by the sense of hearing or touch. It is a click lock and it is only necessary "to count the clicks." It may be operated by one, two or three numbers and an almost endless number of combinations are possible. One turn of the lever shown disconnects the batteries and a revolution of the dial advances the lock bolt, short-circuiting the magneto. The lock switch is enclosed in a neat hard-rubber case and lists at $10.

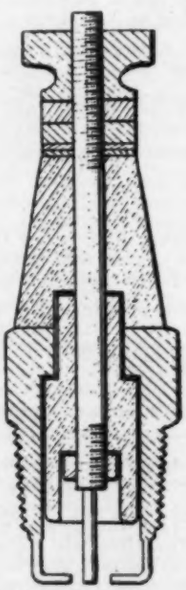


BRANDOW LOCK SWITCH.

A smart, attractive booklet has been issued by the A. W. Harris Oil Company, of Providence, R. I., dealing with their famed oils. Printed in yellow, black and red, the booklet is gotten up with considerable skill and is of a catchy nature. Le Blon, one of France's crack drivers, Barney Oldfield and F. E. Stanley, America's speeders, give their opinion on these oils, and the compiler of the booklet sets forth the different qualities of the firm's products and gives advice on the most suitable grades to use for different weather conditions and on various types of engines.

Merkel Motorcycle.—Numerous changes and improvements have been effected in the 1907 model of the Merkel motorcycle, manufactured by the Merkel Motor Company, Milwaukee, Wis. Wheelbase is six inches longer than formerly. The motor, 3 1-4 bore by 3 inch stroke, developing three horsepower, is set in an upright position and carried in the loop portion of the main frame tube. An entirely new float feed compensating carbureter, designed to give considerable variation of speed, has been utilized. Engine control is a grip device devoid of any angles or parts liable to wear loose or rattle. It is entirely inclosed in the inside of the handle bar, except that portion extending from the center portion of the main handle bar to the throttle lever of the carbureter. The Merkel type of suspension, so designed that it carries the weight of the rider entirely suspended on the springs housed within the rear stays, is retained as a feature of the new model. In addition a spring fork is now employed. A 1 1-4 inch flat, two-play belt is used, and the driving belt idler is so arranged that it can be adjusted while the machine is in operation and can be used in practically the same manner as the clutch of an automobile to free the motor and allow it to run independently. The gasoline tank has a capacity for a 200 miles journey, while the lubricating supply is sufficient for 350 to 450 miles. An efficient muffler is provided, making the motor almost silent when under way.

Big 4 Spark Plug.—The spark plug put on the market by the Big 4 Spark Plug Company, 104 John Street, Detroit, is so named from the fact that it has four electrodes, from which under all ordinary circumstances a flame is obtained from each point at one and the same time. Perfect insulation is obtained by the use of the best imported porcelain in two pieces, the front piece passing through the steel head, one-fourth inch, therefore giving no possible chance for the current to jump through from the central adjusting pin to the steel head. In this plug the large threaded bushing in the rear of the steel head, common to most plugs, is abolished. The steel pin, 3-16-inch in diameter, in the center of the plug, is that from which all adjusting and tightening is done. A special grade of wire is used for making the contacts, which has been proved by long tests not to corrode, scale or in any way break the spark.



CROSS SECTION BIG 4 SPARK PLUG.

1907 MODEL OF THE MERKEL MOTORCYCLE.